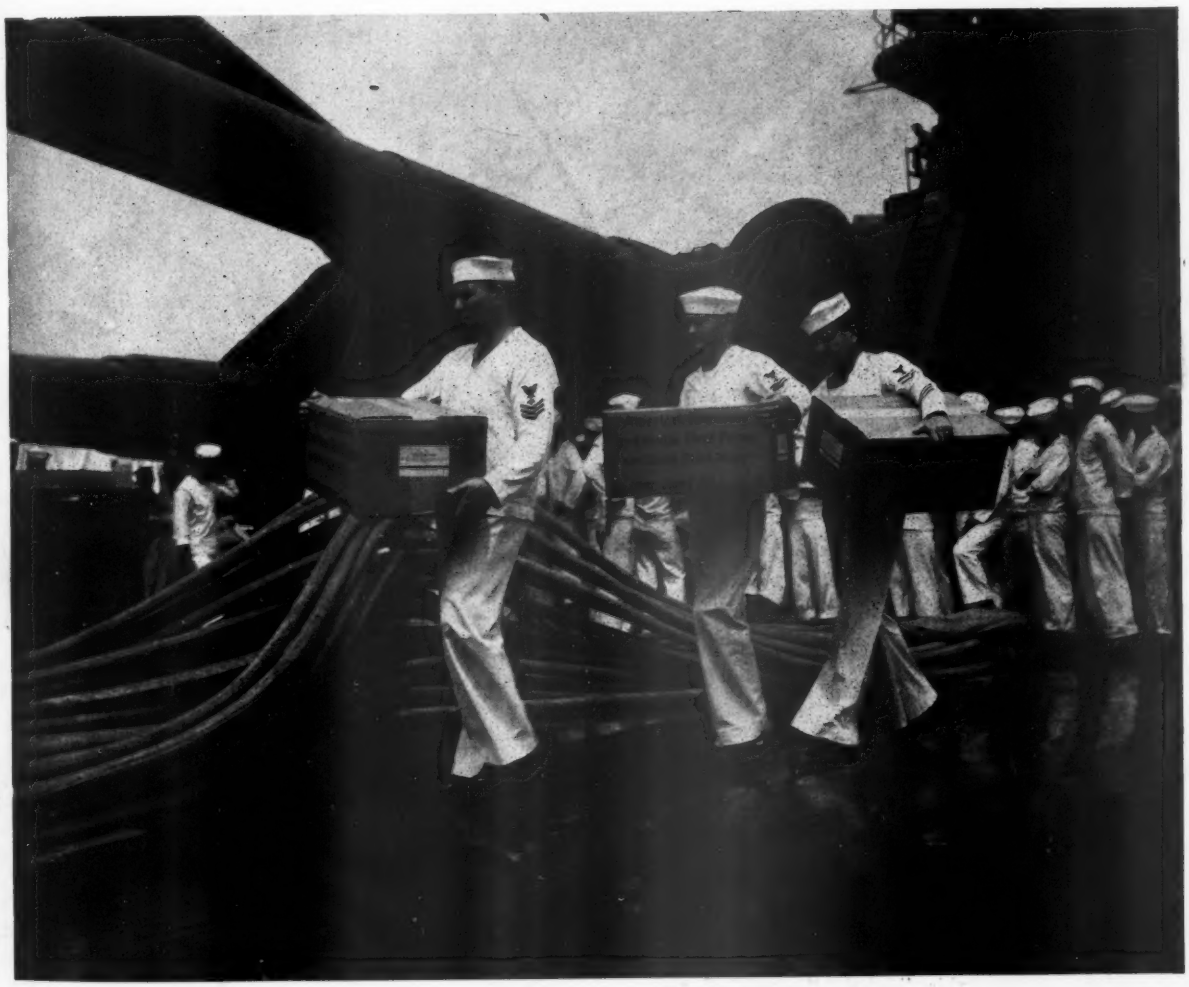
PACIFIC Pulp & Paper INDUSTRY

Technology



PACIFIC COAST PULP

FIRES THESE GUNS

300 bd. ft. of western hemlock are required to make the pulp to fire a 16-inch naval gun. See Page 5.

MAKES THESE BOXES

An article on the production of fibreboard containers for shipping blood plasma to battle fronts is on Page 17.

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Western Pulp Fires the Guns in This War

(Editorial)

IT has taken the greatest war in history and a critical shortage of pulpwood, which might just as well have been averted, to bring home to the United States and Canada a true realization of the importance of the products of the pulp and paper industry.

One of the most important of these products and one which has been submerged far too much in a hush-hush atmosphere is the production of explosive pulp. It just might have helped to ward off the present shortage of pulpwood if the general public and public officials had known something about this production.

A high grade dissolving pulp is necessary for nitrating processes in the manufacture of smokeless powder. **ALL PULP FOR THIS USE** comes from Pacific Coast mills where some of the finest grades of pulp are produced. For the sake of the morale of the men and women employed in those mills, it would seem that the war production and military authorities of the United States and Canada would have advertised more widely the important work they are doing. This kind of publicity might have helped to keep men in the woods as well as in the mills—and kept up production of pulpwood. Manpower agencies might have been more interested in keeping men in the woods and the mills as a result of it.

Actual production figures of the mills making explosive pulp are censored, although production figures on planes, tanks and guns are broadcast to all who would pay heed.

The names and places of mills which are producing explosive pulp are kept secret, yet everyone knows where ships, planes and tanks are built.

About all the men and women in the mills know about the destinies of the rolls of explosive pulp they are turning out is that this pulp goes east to big, heavily guarded ordnance plants where—through some mystic process—the pulp is coated with a yellow substance and covered with black graphite and finally placed in a copper shell where it serves as a propellant or detonator.

An estimated six per cent of all wood pulp produced in the United States goes into smokeless powder.

On THE COVER of this issue is a picture showing the big guns on a United States warship. According to a recent and somewhat belated publicity release, aiming to encourage increased cutting of pulpwood, and approved by the U. S. War Production Board, **IT TAKES 300 BOARD FEET OF PULPWOOD TO MAKE ENOUGH SMOKELESS POWDER TO FIRE A 16-INCH NAVAL GUN,** most powerful weapon on the biggest battleships.

For the benefit of the men and women making this pulp for nitrating purposes, here are some more interesting facts which they should know:

IT TAKES ONE POUND OF PULP TO MAKE THREE POUNDS OF SMOKELESS POWDER.

PULPWOOD FROM A SINGLE WESTERN HEMLOCK OF AVERAGE SIZE (1500 Bd. Ft.) WILL PRODUCE ENOUGH SMOKELESS POWDER TO:

(a) FIRE 450,000 ROUNDS OF AMMUNITION FROM A GARAND RIFLE—ENOUGH TO TURN THE TIDE OF A BATTLE IN EUROPE OR THE SOUTH PACIFIC.

(b) FIRE MORE THAN 2,000 ARMOR-PIERCING SHELLS FROM A 105 MM. CANNON ABOARD A WARSHIP OR ON A BATTLE-FRONT.

(c) 1,000 SHOTS FROM A 155 MM GUN, FAMILIARLY KNOWN TO THE ARMY AS "LONG TOM," REQUIRES ABOUT 20,000 POUNDS OF WOOD PULP TO MAKE THE NECESSARY POWDER.

If you are in one of the mills producing pulp for nitrating purposes, just pin those figures in your hat. And be mighty proud of the job you are doing.

ALL Nitrating Pulp Is from Pacific Coast Mills

IN seeking more information for publication on this subject of producing smokeless powder from wood pulp, we wrote to Washington authorities, including the Bureau of Public Relations of the War Department.

It was in a letter from Lt. Col. Douglas Parmentier, AUS, Chief of the Publications Branch of that bureau, that we learned for the first time the most interesting fact that **THE ENTIRE PRODUCTION OF WOOD PULP FOR USE IN MANUFACTURING SMOKELESS POWDER COMES FROM THE PULP MILLS OF THE PACIFIC COAST**—from this coast only. Which is a tribute to the quality of pulp which is produced in the west.

Laconically, indeed, Colonel Parmentier described the process which wood pulp goes through in the ordnance works as follows:

"Sheeted wood pulp is dried and disintegrated by mechanical means to small particle size to permit uniform nitration."

He said that "approximately" 50 per cent cotton linters and 50 per cent wood pulp are used at present for propellants.

BUT, from an Admiral we have the information that actually wood pulp has a slight edge—

Woodpulp Leads Cotton As Explosive Material

WOODPULP has overtaken cotton linters as the basic material for the manufacture of smokeless powder, according to Rear Admiral Clark Howell Woodward, USN, Chief of the Navy Incentive Division in Washington, D. C.

MORE THAN HALF OF THE SMOKELESS POWDER USED TO FIRE OFF THE GUNS THAT ARE BEATING DOWN THE AXIS IS MADE FROM THE WOODPULP PRODUCED IN THE UNITED STATES AND CANADA. THIS MEANS THAT THE ONE OTHER SOURCE MATERIAL FOR SMOKELESS POWDER — COTTON — NOW IS RUNNING SECOND IN THE RACE.

REAR ADMIRAL C. H. WOODWARD, U. S. N., Chief of the Navy Incentive Division, who reveals that more than one-half of smokeless powder produced in the United States is now made from wood pulp instead of cotton linters, which was the basic material in the last World War.

"You can't fight a war, much less carve out ultimate victory, without wood," says Admiral Woodward in an article entitled "Wood at War" published by the Amercan Forest Products Industries, Inc., 1319 Eighteenth Street, N. W., Washington, D. C.

"It might be mentioned," he says, "that more than half the nitrocellulose in smokeless powder comes from the forests of America."

He continues:

"It is not generally realized that large amounts of wood also go into the manufacture of photographic film, made from cellulose products derived from woodpulp. Film is one of the most strategic devices of total war. A whole campaign may be based on aerial reconnaissance photos. Nothing can give us more accurate evidence of the kind of job we are doing in blasting Axis targets than pictures of air raid results.

"Wood derivatives provide highly requisite naval stores like turpentine, rosin and pitch—each a "must" from time immemorial for all sea-going ships.

"Pulpwood has a multitude of purposes, the most notable, of course, being for the manufacture of paper and cardboard products.

"It is interesting to note in this connection that the blueprint paper used in drafting the plans for the "Iowa" totaled no less than 750 tons—a striking example of one of the less obvious ways the industry serves the Navy."

Admiral Woodward, born in 1877 in Atlanta, Ga., has had a rich career in the Navy. Annapolis '99, he participated in the Spanish war on the U.S.S. "Brooklyn," flagship of Admiral Schley, and saw action in the battle of Santiago de Cuba, and went through the Philippine Insurrection and Boxer campaign.

During World War I, he was executive officer on the U.S.S. "New York," flagship of the squadron attached to the British Grand Fleet operating in the North Sea and was present at the surrender of the German fleet. This article is intended to stimulate production in woods industries.

(Too late for publication in this issue, PACIFIC PULP & PAPER INDUSTRY received an interesting article from Hercules Powder Company on the processes of producing smokeless powder from wood pulp. This will be published in our November issue.)

Let's Kick Away the Barriers

WHEN the Pacific Northwest Trade Association, meeting in Portland recently, went on record as favoring an early relaxation of immigration and other restrictions at the United States-Canada border, it initiated a movement which may have far-reaching consequences in perpetuating the fine spirit of co-operation, stimulated by the war, between two great friendly nations.

The action of the Pacific Northwest Trade Association was based on realism and common sense. After all, we in the United States and Canada are in the war together, and some day we will be solving the problems of peace together. There is no substitute for personal contact in maintaining the complete harmony and mutual understanding that are so necessary for both countries.

To those fortunate individuals who have not been initiated into the mysteries, complications and confusions of border crossing in recent months it is almost incredible that such conditions as actually exist should

be considered necessary even in wartime. To those who have survived the ordeal it is a bitter memory of inconvenience, loss of time and often personal hardship —and to what purpose?

Gas rationing, shortage of hotel, boat and train accommodations have discouraged most people from moving from place to place unless they have good reason for doing so. Most of these inconveniences are no doubt justified.

But the snarl of red tape from which the border crosser must extricate himself is in a very different category. Obviously, there is good cause for maintaining an official record of those who travel in and out of a country. Obviously it is necessary to provide the means of keeping out undesirables.

But it is highly questionable whether a policy of deliberately discouraging Canadians from visiting the United States and Americans from going across the boundary into Canada, such as is now in effect, can be defended on any grounds other than those of a blind officialdom.

Because he was convinced in his own mind of this fact, Miller Freeman, publisher of this journal, made a personal recommendation to the Pacific Northwest Trade Association. Happily, this has now borne fruit in the enthusiastic passage of resolutions supporting the proposal, and the association will make it its business during the coming months to impress on congressmen and members of the Canadian house of commons the importance of early action.

The progressive and energetic Pacific Northwest Trade Association will have amply justified its existence if it succeeds only in the attainment of this vital objective—the removal of artificial and unnecessary barriers between Canada and the United States.

Bartsch, New York Banker, Elected Rayonier Executive Vice President

● Edward Bartsch, of New York, was elected executive vice president of Rayonier Incorporated at a directors' meeting in San Francisco September 23, according to an announcement by E. M. Mills, president. Mr. Bartsch succeeds J. D. Zellerbach, who resigned as executive vice president due to the press of other responsibilities. Mr. Zellerbach will, however, continue to serve as a director and member of the Executive Committee of the company.

Mr. Bartsch has been connected with the Chase National Bank of New York since 1921. He attended Columbia University and is a graduate of the New York Institute of Accountancy and Law. During World War I he served for two years in the United States Navy.

Before joining the Chase organization, Mr. Bartsch was connected with a firm of certified public accountants with which he had been associated for several years. During recent years he has been vice president and a loaning officer identified with the handling of the bank's business in the Far West, and prior to that was most active in conducting many industrial re-organizations.

EDWARD BARTSCH, New York banker, who has been elected Executive Vice President of Rayonier Incorporated, succeeding J. D. Zellerbach. Mr. BARTSCH has had active experience in conducting industrial reorganizations.

Obtains Timber For Post-War Mill

● Planning for the post-war period, Bloedel, Stewart & Welch, British Columbia sawmill and logging organization, has been extending its timber holdings in the southwest section of Vancouver Island during the past few months.

H. A. Simons of Chicago, who designed a 130-ton unbleached sulphite pulp mill for the Bloedel company before the war with a view to its establishment at Port Alberni, is being retained as consultant in connection with the company's future program, whenever it is considered advisable to proceed with it. The company had plans for a sulphite mill when war interfered.

First Shipments Made Of Salvaged Logs

● Trial shipments of pulpwood from the logged-off lands of Comox Logging & Railway Company at Ladysmith, B. C., have been made to Powell River Company across the Strait of Georgia, in connectin with the co-operative experiment in logging waste utilization, but the movement is not expected to attain substantial volume until this winter.

Although no definite technique has been so far approved, representatives of Comox state that it seems desirable to send the logs in random lengths so that they can be sorted according to requirements at the pulp mill. The knotty wood has been found suitable as grinder wood stock; the wood with fewer or no knots is fed direct into the mill.

At Powell River it has been found necessary to make some adjustments to the slashers.

Cooney Estate Partly Spent But Mill Offer Stands

● A hospital wing and homes for Catholic sisters and nurses will be built at Aberdeen, Wash., with funds from the estate of the late Neil Cooney, who also offered $100,000 in cash and a 500-acre waterfront site at Cosmopolis, Wash., to anyone who would build a pulp mill there.

The wing to St. Joseph's hospital and the residences will be constructed with funds from a $600,000 bequest made by Mr. Cooney, a Canadian-born pioneer Grays Harbor lumberman, who died May 8.

The pulp mill offer, which was advertised in this magazine in the June, 1943, issue, still stands. Any such contract must be entered into no later than December 7 of this year. The mill, under terms of the will, must then be in operation 19 months after Mr. Cooney's death. Otherwise this money will revert to the hospital.

Beloit Executive Dies

V. S. Denison of the Beloit Iron Works died at Sandusky, Ohio, on September 30. He was born at Connersville, Indiana, January 4, 1884.

A recognized authority on paper machinery and particularly suction rolls, Mr. Denison was also engineer of the Sandusky Foundry and Machine Company. He became affiliated with the Beloit Iron Works in 1929 and had been with that company since then. He was Chairman of the American Pulp and Paper Mill Superintendents Association in 1942. He was also an affiliate member of TAPPI.

Charters Heads Fund

● George W. Charters, assistant resident manager of the Camas, Wash., mill of Crown Zellerbach Corp., was chosen as chairman of the 1943 community chest in that town by the Camas community council at a meeting, Sept. 24.

Mr. Charters is also participating in a citizens' organization studying post-war plans for Clark County. He is a member of a research and planning committee which met recently in Vancouver, Wash.

Glen King Moves

Glen D. King, who was assistant technical supervisor at the Crown Zellerbach mill at Port Angeles, Wash., has been transferred to the Central Technical Department, Crown Zellerbach Corporation, Camas, Wash.

The Army-Navy Chicago Conference --As Seen Through Pacific Coast Eyes

TAPPI-sponsored meeting broke attendance records ✓ ✓ ✓ Advance in packaging revealed, but even greater improvements are demanded as reports and pictures reveal heavy losses of war supplies from inadequate boxing and wrapping ✓ ✓ ✓ A review of highlights of the sessions.

PACIFIC PULP & PAPER INDUSTRY sent its own representative to Chicago to cover the Army-Navy Requirements Conference, September 21-24, sponsored by TAPPI.

(In the following report, an attempt has been made to discuss events at that conference of SPECIAL INTEREST to those in the Pacific Coast industry who were unable to attend because of their preoccupation with important war work, the rigors of wartime travel or who stayed home for other reasons).

WITH every branch of the army, navy and WPB which has to do with production and use of pulp and paper participating, the Army-Navy Requirements Conference, which substituted this year for the annual fall meeting of TAPPI, broke all past attendance records for that traditional peace-time event.

Reasons for this were (1) the addition of about 150 army, navy and government representatives, ranging from admirals and generals down the ranks, (2) the attendance of many users of packaging and (3) concurrent meetings held by several other associations—the manufacturers' group, paperboard organizations and the Waxed Paper Institute, among others.

Ronald G. Macdonald, secretary-treasurer of TAPPI, said that in addition to army and navy officers, there were about 700 registrants for all events and an additional 1,300 who attended the extensive Army-Navy Exhibit of wartime uses of pulp and paper, also held in the Palmer House.

From the point of view of a corporal's guard of far westerners who were present, these were highlights of the conference:

PRESENT AND PAST PACIFIC COAST men seen at Army-Navy Paper Requirements Conference, Chicago, Sept. 21-23. At extreme left is WALTER M. BAIN, Sales and Service Manager, Paper Products Division, The Glidden Company, Chicago. He was chairman of the arrangements committee and also of one of the round tables.

Next to him, above, are (left) MYRON BLACK, Sulphite Superintendent and Technical Director, Inland Empire Paper Company, Spokane (Millwood), Wash., and FRED "DUKE" WELLINGTON, Field Representative, Western Gear Works, Seattle.

Together in lower picture are (left) DAVID BRITTAIN, Representative, Mead Sales Company, Chicago, and KEITH MacBAIN, Chief Engineer, Berst, Forster, Dixfield Company, New York City, each of whom was formerly connected with Weyerhaeuser mills in Everett and Longview.

1. The navy's disclosure of heavy losses of war supplies through improper or inadequate packaging, sometimes affecting military operations, substantiated by a remarkable movie made in the Pacific islands showing what happened to many kinds of packaging.

2. The opportunity for army and navy men to sit down with technicians of the industry and talk over requirements and conditions. In this sense, question and answer periods were often much more important than the speeches and papers delivered.

3. Exhibits ranging from a Pratt & Whitney aircraft engine in a moisture vapor barrier dehydrated with silica gel to a 16-foot diameter navy creped kraft cargo parachute capable of carrying 100 pounds from a plane speeding 180 mph (costing one-fifth as much as the human escape chute). Many other new types of containers too numerous to list were shown. (Inquiries regarding possible re-showing of these exhibits or movies should be addressed to S. G. Somers, director of exhibits, public relations department, War Department, Washington, D. C.)

4. A speech by Colonel Robert R. McCormick, publisher of the Chicago Tribune, which owns the Ontario Paper Company where industrial alcohol is being made from waste liquor. He said "those of us who are informed on chemical matters can see a great future in the chemistry of wood . . . we are taking out the alcohol and when we can find somebody who can tell us what lignin is, we will try to take that out, too . . . this raises the question whether the manufacture of paper will not become wholly a chemical process."

5. An acid pulping round table, conducted by George H. McGregor, former superintendent at the Weyerhaeuser Timber Company's pulp mill in Longview and now senior chemical engineer, Forest Products Laboratory, Madison, Wis., which discussed possibilities of increasing the use of less common pulpwoods and the pulp requirements for making plastics. This round table, of special interest to the Pacific Coast

industry, is discussed at length in another article in this issue.

6. A water vapor permeability testing session, of greatest importance in developing much needed wartime food packaging particularly. An outstanding paper at this session was by L. Boor and J. K. Dixon, American Cyanamid Company, Stamford, Conn. In principle, their method of determining vapor transmission consisted of a means of clamping a test substance between two flanged members, providing a high water vapor pressure on one side, and low on the other, and measuring the increase of moisture content on the dry side due to permeation of moisture through the membrane, by means of a sensitive electrical cell. This cell operates on the principle of change in thermal conductivity of air-water vapor mixtures with changes in water vapor concentration.

7. A discussion of effects of slime inhibiting materials and disinfectants on fish in mill streams and on bacteria in white water systems. "Acclimation of bacteria to disinfectants used in paper and paperboard industry" by John W. Appling and B. F. Shema, Institute of Paper Chemistry, Appleton, Wis., brought out that some bacteria gradually build up a tolerance for toxic materials so used. Aerobacter aerogenes grew on 0.230% sodium pentachlorophenate Santobrite, a concentration 9.2 times the concentration on which they grew prior to acclimatization. Willis M. Van Horn of the Institute discussed experiments determining toxic effects on fish of Lignasan,

AMONG THOSE AT THE TAPPI-sponsored meetings in Chicago, Sept. 21-23: J. C. JACKSON, Pacific Waxed Paper Company, Seattle (left), who also attended the Waxed Paper Institute on Sept. 20 in the same city, and OTTO HUDRLIK, The Flox Co., Portland, Ore.

Merfenal, Nalco 21, Nalco 23 and Santobrite. It appeared that concentrations of these slime inhibitors were dangerous to fish life when they were above the amounts encountered in normal mill practice.

8. In an army-navy panel, Robert E. Meyers and George V. N. Morin, The Resinous Products and Chemical Company, Philadelphia, discussed a new specially modified urea-formaldehyde resin which greatly simplifies the introduction of wet strength inexpensively into a variety of papers. It is water soluble, sold as 50% solution and can be introduced anywhere from beater to head box. Retention and development of wet strength in finished paper are satisfactory at any pH below 5.0, optimum conditions being pH between 4.0 and 5.0 with at least 1-2% alum on the weight of pulp. An appreciable wet strength is present as high as pH 8.0. It is reported the broke containing this resin is much easier to defiber than that containing melamine resins.

9. A coatings and adhesives round table, conducted by Walter M. Bain, former technical director at a Pacific Coast mill and now in charge of sales and service of paper products, soya products division, for The Glidden Company. It was brought out at this session that corn and other common starches will probably become increasingly scarce and casein will be virtually impossible to obtain. Developments of many substitutes and their application were discussed.

10. An address by R. J. Zaumeyer, New Products Development Section, Pulp and Paper Division, WPB, in which is revealed that his section has handled 46 projects for new war uses of paper in "formal manner" and cleared "several hundred other items." He said the V-box program is conserving 1500 carloads of lumber per month and that TNT, the Carlisle First Aid Package with sulfadiozine tablets and many other unusual commodities have been taken out of wood and steel and packaged in paper. Jettison gasoline tanks made of vulcanized fibre, wing structures for trainer planes made of paper laminates were mentioned.

11. An address by A. E. Giegengack, public printer of the United States. He said battles were delayed

OTHER WESTERNERS AND EX-WESTERNERS AT THE CHICAGO TAPPI-sponsored conference included (left to right): W. NORMAN KELLY, Manager, Pulp Division, Weyerhaeuser Timber Company, Longview, Wash.; WILLIAM A. GEIGER, Sales Representative of the same company at Chicago, and OTTO C. SCHOENWERK, Consulting Engineer (3240 Lake Shore Drive), Chicago.

and campaigns held up by failure of armed forces to get paper products and he made the disclosure that only forty bids were received for no more than 60 per cent of the government's requirements for paper of various kinds and grades for the fourth quarter of 1943. The government asked for bids on 80,000,000 pounds of paper products, of which, he said, 90 per cent is to go directly into the conduct of the war. Manpower and pulp shortages contributed to failure to bid on government orders, he said, adding he was reluctant to believe reports that "some of the mills refuse our offerings because they feel that there is more profit in their commercial business.

12. A letter from Harold J. Boeschenstein, coordinator on pulpwood, pulp, paper and paper products, WPB, in which he urged the industry "in its own interest and as its obligation in the war effort" to voluntarily (a) do everything it can to increase pulpwood production, (b) make pulp go as far as possible by reducing weights, dilutions, etc., and (c) eliminate unnecessary products and devote materials to essential needs. By doing so, he suggested, "this will make for minimum regulatory action by the government."

Three Problems

● From discussions among those attending the conference there appeared to be three outstanding over-all problems that will test the intelligence and ingenuity of the industry in the months to come:

1. The one big double-headed dilemma on everyone's mind was the dwindling stock of pulpwood and the critical shortage of manpower in the woods which caused it. Colonel McCormick charged that "thousands and thousands of cords are being held on farms in hope of a black market." But apparently many present did not agree. The heavy drain of manpower into armed services and war industries in both United States and Canada was blamed. Men from the middle west and eastern pulp and paper mills were frankly in fear of dire developments.

2. The insistent demands of the army and navy for even more and better forms of packaging and the necessity of carrying on this task by finding new materials to use as starches, casein, adhesives, etc. Major John C. Babson, chief, inspection, division, procurement branch, office of the Chief of Engineers, U. S. Army, challenged technical men to develop nine new types of packaging which are listed at the end of this article.

3. With the increased use of melamine resins, asphalts and similar materials in paperboard products, technical men expressed the view that future development in the laboratories must point toward ways of getting these resins and asphalts out of used products so they can be used over again. Some reclaiming of these high wet strength papers is done through use of steam, alum, powerful hydrapulpers, cookers, etc. Much more needs to be done in this line.

Chronological Account

● Other journals already have published abstracts of many of the papers delivered at the meeting and a day by day report of proceedings. The above seem to be points of chief interest on the West Coast. But following is a brief chronological account:

The conference opened September 21 with presentation of colors by a Great Lakes Naval Station guard and music by the Great Lakes band, led by the well-known Lt. Commdr. Eddie Peabody. Ralph A. Hayward, Kalamazoo, Mich., president of TAPPI, presided and the opening speeches were broadcast on the radio.

A statement by Rear Admiral William Brent Young, chief of the navy's bureau of supplies and accounts, revealed that losses in war supplies by poor packaging interfered with planned operations. His statement was read by Rear Admiral Everett G. Morsell, district supply officer, Ninth Naval District, who said "our pulp and paper production may determine the course of the war." He said faulty packaging may cost lives needlessly and gave the industry a slogan: "PACK IT RIGHT TO REACH THE FIGHT."

Brig. Gen. E. E. MacMorland, office of the chief of ordnance, U. S. Army, praised TAPPI for establishing standards and developing tests for packages. He said at the start of the war, no fibreboard container "could stand the rigors of war" until V-boxes were developed. He said grease-proof wrapping paper production totalled only one million square yards per month and is now 15 times that amount. Also that two years ago only 16,000 tons of waterproof paper were produced as compared with 200,000 tons today.

This first session was featured by the movie of packaging that broke up and deteriorated in Guadalcanal and other islands, along with some views of adequate packaging that withstood weather and water in that area. A navy and an army session on packaging followed through that first day. In the evening, a "Fort Dearborn Dinner Party" with entertainment and good fellowship was held in the ball room of the Palmer House.

The morning of September 22, the second day, was highlighted by the two round table discussions already described—each led by former westerners, the acid pulping meeting by Mr. McGregor and the coatings and adhesives round table by Mr. Bain, who also was the chairman of the highly important arrangements committee for the conference.

At the luncheon addressed by Colonel McCormick, Mr. Hayward introduced such well known men, seated on the platform, as Grover Keefe, former chairman of the American Pulp & Paper Mill Supertintendents Association; E. W. "Ted" Tinker, executive secretary of the American Paper & Pulp Association, and George H. Mead, president of the Mead Corporation and of the A. P. & P. A.

More On McCormick

● Colonel McCormick, in his speech, told how he started a small groundwood mill at Thorold, Ont., over thirty years ago with the assistance of Pusey and Jones Corporation. Two machines, then the fastest in the world, ran 400 feet per minute. Owing to higher prices and scarcity of pulpwood, he said, he would have "gone bust" in 1921 if his advertising had fallen off. Now he has machines running 1600 feet per minute. But he made the interesting disclosure that the cost of a finished ton of paper from his mill in 1939 was $32.80, exactly the same as it was in 1913. Costs have increased while production speeded up and other economies were being made.

Regarding the alcohol plant at his Thorold mill, he suggested "the profits from sugar may become greater than the profits from fibre."

The colonel, well known for his joustings with Canadians and British, turned briefly to the pulp and paper industry in Canada in charging Canadian manufacturers with having "invited the government into their business" and he predicted that eventually their business would belong to the Canadian government.

At the very close of his speech, in an emotional voice, he turned to his favorite newspaper editorial, theme, declaring: "It is not so much of a job to lick the Germans . . . the real job is for us at home to save our independence and to save our civilization."

After this luncheon came an Army-Navy-WPB session addressed by Mr. Zaumeyer and a technical session discussing the effects and uses of resins. An alkaline pulping and a papermaking round table were held. The evening's entertainment included tickets to a radio show.

The papers on effects of disinfectants on fish and bacteria, already described here, were given at a technical session on the morning of September 23. Case studies of packaging were held at another forenoon meeting.

That day's luncheon, presided over by A. E. Montgomery, western manager for J. O. Ross Engineering Corp., and the chairman of the convention, was featured by Mr. Giegengack's talk. Douglas Jones, secretary-treasurer of the Technical Section, Canadian Pulp & Paper Industry, was introduced. President Hayward of TAPPI, asking for permission to talk, pleaded for a continuation of the spirit of unity of TAPPI in the post-war period. Mr. Bain, as chairman of arrangements, and William H. Monson, Hooker Electrochemical Company, as chairman of entertainment, were among others introduced.

Mr. Giegengack told a dramatic story of a young army lieutenant coming to the government printing office with an appeal for speedy action in printing 60,000 books of instruction on bombing for the African expedition. Within 36 hours, Mr. Giegengack said, he left the office with the manuals and the next day they arrived in Africa. The speaker listed many figures on government printing, one of the most interesting disclosures that 6,500,000 pounds of paper were used on the Third War Loan drive.

The water vapor permeability testing session wound up the conference on the afternoon of September 23.

One of the most significant statements, expressing the spirit and the meaning of the entire conference, was that made by Mr. Zaumeyer of Pulp & Paper Division's development committee:

"PAPER IS A SUBSTITUTE FOR MANY THINGS BUT THERE IS NO SUBSTITUTE FOR PAPER."

A Challenge To Technical Men

● A challenge to technical men was made by the Army at the TAPPI-sponsored Army-Navy Requirements Conference in Chicago. Major John C. Babson, chief, inspection division, procurement branch office of the chief of engineers, listed nine kinds of packages needed for efficient conduct of the war.

Any ideas submitted to PACIFIC PULP & PAPER INDUSTRY by our readers will be forwarded to proper authorities with due credit to the originators. These are the nine problems:

1. What type paper package can be provided for export shipment of camouflage nets of all types?

Reason: We have satisfactory packaging using burlap and Canabury cloth. These items will probably be hard to obtain as time goes on. There would be other advantages to using a less critical material if one should be found.

2. What type paper package can be developed for export shipment of insulation, wallboard and plywood?

Reason: Would like to hold container to a crate instead of a box and thus conserve lumber. However, material must be kept dry, and hence the waterproof paper wrapping desired in the crate.

3. What type paper package (sack) can be developed for export shipment of cement and fire clay?

Reason : Present bags are not keeping contents dry, and in order to insure dryness, barrels have to be used, and this makes handling and distribution more intricate.

4. What type paper container can be provided for export shipment of bituminous products such as roofing compounds?

Reason: Present containers unsatisfactory despite all guarantees and arguments put up by suppliers. Therefore metal containers are the only satisfactory answer.

5. What type paper container can be provided for export shipment of various chemical compounds such as calcium chloride?

6. What type paper container can be provided for export shipment of surveying instruments, transits, levels, alidades?

7. What type container or method of packaging can be developed for the export shipment of writing paper, office supplies, and photographic film?

8. We will desire a paper suitable for Type 2 pack.

9. One of our most serious needs is for a good, fast setting, cold type, water resistant glue for present packages.

Wood Species and Plastics Are Discussed At Acid Pulping Round Table

OF special interest on the Pacific Coast was the acid pulping round table held September 22 at the TAPPI-sponsored Army-Navy requirements conference in Chicago. At this round table the possibility of using less common woods for pulping, to a greater extent than is done at present, including western pine, larch, red cedar and alder, was discussed. There was also a lively discussion of the qualities needed in wood pulp now being increasingly utilized in the plastics industry.

This meeting was presided over by George H. McGregor, former superintendent, Pulp Division, Weyerhaeuser Timber Company, Longview, Wash., and now senior chemical engineer at the U. S. Forest Products Laboratory, Madison, Wis.

R. V. Haslanger, of the Monsanto Chemical Company, opened the discussion on plastics by describing wood pulp uses in thermosetting, thermoplastic and other forms of plastic manufacture. His paper follows this article. An interesting point he made was that in 1941, the last year that figures were available, only 30,000,000 pounds of wood pulp (.01 per cent of total production), was used in plastics.

He was followed by Dr. Alfred H. Croup, physicist, Hammermill Paper Company, Erie, Pa., who discussed "Sulphite Pulps for Laminating."

During a question and answer period it was brought out that for certain strength properties, Mitscherlich sulphite pulp has proved more useful for plastic manufacture than other pulps. There was considerable discussion of possible use of kraft. It was pointed out that kraft, although strong, does not absorb impregnation as well as other types. It was reported that sulphate and soda pulps were not used at all for nitration.

Mr. McGregor and J. N. McGovern, associate chemist, U. S. Forest Products Laboratory, Madison, Wis., collaborated as authors of the paper on use of less common woods which was entitled "Some Factors Affecting Sulphite Pulp Production." This was delivered by Mr. McGovern. This paper and two tables they compiled and submitted at the meeting, describing the density, composition and pulping characteristics of pulpwoods, are published on later pages in this issue.

Some Pacific Coast mills are using these less common woods now. They have much information available in their operating files on this subject and tests have been made recently in Pacific Coast mills. In his address, Mr. McGovern said that western woods such as western white pine, larch and red cedar require more drastic pulping than the more common hemlock. But with the present shortage of pulpwood threatening to seriously restrict essential war production of pulp and paper, he held that this would be worthwhile. While alder was also suggested as a pulpwood during the discussions, no data was compiled on the use of that species of wood. It was suggested that a small scale pulping experiment could determine the values of alder on the Pacific Coast.

Discussion of Woods

Members of the audience raised the question of whether finding and using new sources of woodpulp would solve the major problem of the industry today, contending that it is a shortage of manpower in the logging industries rather than of timber itself that is the real cause of the present crisis. This general conclusion was not disputed, but it was pointed out that farmers who are now being urged to cut pulpwood can get out these less common species of woods in cases where hemlock, balsam and spruce are not available on their farms. It was reported that at least one eastern groundwood mill expects to make considerable use of the species of woods suggested for pulping by Messrs. McGregor and McGovern.

Other ways of making present supplies of wood go farther were suggested. It was held that savings were possible in the chipping de-

THE HOPE AND FAITH OF THE FAMILY of a Flying Fortress skipper were rewarded on September 18 when word was received that First Lt. Jack Sundberg was a prisoner in Germany.

Jack, formerly attached to the San Francisco headquarters of the Crown Zellerbach Corporation, was reported missing following a daylight raid over Germany. Another pilot saw the plane fall to pieces in the air but the crew bailed out. The lieutenant's father, A. L. "Ole" Sundberg, has been an employe of the Zellerbach Paper Company, San Francisco division, for nearly 39 years.

partments of mills and that by not trying to screen too close, wood can be saved. It was stated that pin chips were being saved and used in some mills. Cooking of one to two percent of sawdust in with chips had been tried but the prevailing opinion was that for such a little yield, the dirt problem should not be tolerated.

It was concluded that many improvements were possible in the antiquated wood rooms of some mills but priorities and other restrictions made it difficult to effect these improvements even when they saved such important wartime resources as wood and manpower.

Cuprammonium Viscosity

● A formal paper, "Cuprammonium Viscosity of Pulp Using the Hoeppler Viscosimeter," was given. Prepared by W. O. Hisey and C. E. Brandon of New York State College of Forestry, Syracuse, N. Y., it was delivered by Mr. Hisey.

The abstract of this paper follows:

The viscosimeter used in this study was of the Hoeppler type, which is a falling sphere viscosimeter in which the tube is inclined and the sphere, rolling down the incline, forces the liquid through a crescent shaped annulus between the sphere and the tube wall. A very high degree of accuracy is claimed for the instrument and it is useful for fluids of a wide range of viscosity. The present study was made to determine whether or not satisfactory results could be obtained with cellulose dispersed in cuprammonium viscosity tests.

It was found that the Hoeppler viscosimeter is suitable for accurate work. The probable error of tests made with this instrument is less than 1%, and an error as great as 2% would be experienced only once in twenty tests.

The rate of dispersion of cellulose in cuprammonium solution is increased by rapid agitation, decreased pulp concentration, and decreased copper concentration. Increasing the time of agitation beyond the visual endpoint results in very little change in viscosity. Satisfactory dispersion of cellulose in a concentration of 0.25% in a period of 5 minutes was obtained, using TAPPI standard cuprammonium and a high wheel speed.

An increase in the concentration of ammonia results in a marked decrease in viscosity. The TAPPI tolerance of plus or minus 10 grams per liter of ammonia seems to be excessive, since it represents a possible error of 7.8% in the viscosity of a 1% cellulose dispersion.

Variation of copper concentration appears to be of less importance than the variation of ammonia concentration, since the TAPPI standard tolerance of plus or minus 0.2 grams per liter represents an error of only 0.1% in the viscosity of a dispersion containing 1% of cellulose.

Measurement of the specific gravity of cuprammonium solutions containing 1% of cellulose, by means of a Westphal balance, indicate that the value of 0.96 given in T 206 m is somewhat high, and a value of 0.945 would be more truly representative.

Among Those Present

● Westerners who attended the TAPPI-sponsored Chicago meeting were:

Norman Kelly, manager, Pulp Division, Weyerhaeuser Timber Company, Longview, Wash.; **Myron W. Black,** sulphite superintendent and technical director, Inland Empire Paper Company, Spokane (Millwood), Wash.; **J. C. Jackson,** representative, Pacific Waxed Paper Company, Seattle; **Otto Hudrlik,** The Flox Company, Portland, Ore.; **Albert Wilson,** editor, Pacific Pulp & Paper Industry, Seattle, and **Fred "Duke" Wellington,** field representative, Western Gear Works, Seattle.

There were a number of others present who spent varying periods of years on the West Coast, including **George H. McGregor,** former superintendent of the Weyerhaeuser Timber Company pulp mill at Longview, now senior chemical engineer, Forest Products Laboratory, Madison, Wis.; **Keith MacBain,** former plant engineer of the same Longview mill, now chief engineer, Berst-Forster-Dixfield Company, New York; **Fred C. Clark,** consulting engineer, Waltham, Mass., who did work at Camas, Everett and Port Angeles, Wash.; **David Brittain,** employed for five years at Everett and Longview mills and now representative of Mead Sales Company, Chicago; **Walter M. Bain,** for many years technical director at a Pacific Coast mill, and now in charge of sales and service, paper products, soya products division, The Glidden Company, Chicago; **A. W. Neubauer,** for eight years a technical assistant in a Coast mill's laboratory, and now Mr. Bain's assistant in the Chicago office of the Glidden Company; **William Geiger** and **David Bigelow,** formerly with Weyerhaeuser on the Coast and now in that company's eastern pulp division sales offices in Chicago and Clinton, Mass., respectively, and **Otto C. Schoenwerk,** consulting engineer, Chicago, veteran of many western projects.

Some of the others present who have toured the West Coast mills or who are well known in this region of the country included: **C. Elmer Macklem** and **Cassius R. "Cash" Whipple,** Beloit Iron Works; **Rex Vincent,** Bulkley, Dunton Pulp Company; **Joseph Scheuermann** and **Tom Carter,** Cameron Machine Company; **Howard W. Hall,** The Dicalite Company; **R. O. Monroe,** The Johnson Corporation; **Nathan Cohn,** Leeds & Northrup Company; **Jerry Strasser,** Stein Hall & Company; **Dr. F. R. Henry,** Simonds Worden White Company; **Steve A. Staege** and **Ed Cowles,** Black-Clawson Company; **R. F. Vokes,** Dilts Machine Works; **A. F. Crossman,** Lindsay Wire Weaving Company, **Jack Loomis,** Calco Chemical Division, American Cyanamid Corporation; **J. Dulmage,** Dow Chemical Company; **Murray Bennett,** Stebbins Engineering Corporation; **G. H. Chidester,** chief of pulp and paper section, U. S. Forest Products Laboratory, Madison, Wis.; **Dr. Otto Kres,** director, Institute of Paper Chemistry, Appleton, Wis.; **Howard Gerber** and **Paul Foster,** Williams-Gray Company; **O. A. DeCelle** and **A. C. Embshoff,** Infilco Incorporated; **F. R. Grassle,** Hills-McCanna Company; **William H. Monsson,** Hooker Electrochemical Chemical Company, and **A. E. Montgomery,** J. O. Ross Engineering Company.

Sponsors of the conference who have plants on the Pacific Coast were Crown Zellerbach Corporation, Fernstrom Paper Mills, Inc., Puget Sound Pulp & Timber Company, St. Regis Paper Company, Scott Paper Company, Sorg Paper Company, and Pulp Division, Weyerhaeuser Timber Company.

Among other sponsors were American Cyanamid and Chemical Corp., Beloit Iron Works, Black-Clawson Company, Cameron Machine Company, Chromium Corp. of America, Covel-Hanchett Company, Dow Chemical Company, Foxboro Company, General Dyestuff Corp., Hercules Powder Company, Hooker Electrochemical Company, F. C. Huyck & Sons, Infilco, Inc., Johns-Manville Sales Corp., E. D. Jones & Sons, Lindsay Wire Weaving Company, Lockport Felt Company, Monsanto Chemical Company, Nash Engineering Company, National Aluminate Corp., Rice Barton Corp., J. O. Ross Engineering Corp., Socony-Vacuum Company, Sonoco Products Company, Valley Iron Works, Williams-Gray Company and the Waxed Paper Institute, Inc.

New Superintendent

VELDEN M. ANDERSON, whose appointment as Superintendent of Fir-Tex Insulating Board Co., St. Helens, Ore., was announced in mid-September by R. W. SIMERAL, Vice President and General Manager.

Born In Rainier, Ore., 33 years ago, Mr. ANDERSON is married and has a young daughter. He has been employed in the Fir-Tex mill for 13 years and stepped up to his new post from Night Superintendent.

Inland Empire Co.'s Prospects

There is enough pulpwood in north Idaho, Western Montana and nearby parts of Oregon and Washington to keep the Inland Empire Paper Company of Millwood, Wash., suburban Spokane, in operation for 1,000 years, according to an article in the Spokane Spokesman-Review, quoting the U. S. Forest Service. But the logging problem here, as elsewhere, is the shortage of manpower in the woods.

Some Factors Affecting Sulfite Pulp Production

By J. N. McGOVERN and G. H. McGREGOR
U. S. Forest Products Laboratory

● Present trends in sulfite pulp production and demand indicate a continued demand at the current high level but a decline in production with the result of a probable pulp scarcity in 1944. This prospective deficiency arises primarily from inadequate woods labor and logging facilities to produce needed pulpwood supplies. Providing sufficient woods labor is the direct and obvious way to avert the impending pulp insufficiency. However, the threatened pulp shortage may be lessened in part by utilizing available but little-used pulping species and by operating the pulp mill to get the maximum yield of pulp from the available wood.

GEORGE H. McGREGOR (right), former Superintendent in a Pacific Coast mill and now Senior Chemical Engineer at the U. S. Forest Products Laboratory, Madison, Wis., is shown here presiding at the Acid Pulping Round Table, September 22, at the Army-Navy Paper Requirements Conference in Chicago. J. N. McGOVERN, an associate of Mr. McGregor's at Madison, is delivering the paper they jointly prepared on the possibilities of using less common species of wood for pulp.

I. Utilization of More Available Species

Many sulfite mills can perhaps augment their dwindling supplies of spruce, balsam, and grand fir, and eastern and western hemlock, which are generally cut at some distant point, with locally available wood of less favored species. Such supplementary wood might consist of logging, and veneer, and sawmill wastes and second growth wood lot material. This wood will consist mostly of hardwoods like aspen, birch, beech, maple, tupelo (gum), and cottonwood; northern pines and tamarack; western pine, larch, redcedar, and Douglas-fir; and some southern pine.

A. Characteristics of less-common species. — The pulps may be relatively low in strength, or shivey, or have poor color characteristic, or difficultly bleached. Such inferiorities as exist can be possibly tolerated under present circumstances. On the other hand, some of the species possess the advantages of low cost, of yielding relatively large amounts of pulp from a unit of wood, and of having properties suitable for special purposes.

B. Pulping procedures for less-common species.—Pulping most of the species requires no radical changes in pulping procedures, although in some cases the wood may have to be cooked drastically to produce a pulp.

II. Sulfite Process Variables Affecting Pulp Production

The daily capacity of a sulfite digester is measured by amount of

DENSITY AND CHEMICAL COMPOSITION OF COMMON AND LESS COMMON PULPWOODS[1]

SPECIES—	Density (ovendry weight and green vol.)	Chemical Composition of Wood						
		Holo-cellulose		Cross and Bevan cellulose				
		Total	Alpha	Total	Alpha	Lignin	Total pentosans	Solubility in ether
	Lbs. per cu. ft.	%	%	%	%	%	%	%
Hardwoods								
Aspen (Populus tremuloides)	22	82	51	64	48	17	23	1.0
Beech (Fagus grandifolia)	34	....	....	....	....	23	20	.3
Birch paper (Betula papyrifera)	34	....	....	60	41	25	26	1.5
Birch, Yellow (B. lutea)	34	....	....	61	....	....	25	.6
Cottonwood (Populus deltoides)	23	....	....	63	46	24	19	.3
Maple (Acer saccharum)	35	76	....	57	42	23	21	.3
Tupelo (gum) (Nyssa acquatica)	30	....	....	60	46	24	17	.3
Softwoods								
Douglas-fir (Pseudotsuga taxifolia)	29	....	....	59	43	30	8	1.5
Fir, balsam (Abies balsamea)	21	70	44	58	42	29	11	1
Fir, Grand (A. grandis)	23	....	....	63	46	27	9	.9
Hemlock, Eastern (Tsuga canadensis)	24	68	48	56	43	32	10	.7
Hemlock, Western (T. heterophylla)	25	....	....	59	43	30	9	.5
Pine, jack (Pinus banksiana)	24	72	49	58	41	27	13	2
Pine, Northern white (P. strobus)	21	....	....	60	44	28	11	5
Pine, Red (P. resinosa)	27	....	....	54	....	24	11	5
Pine, Southern slash (P. caribaea)	30	....	....	59	42	29	12	4
Pine, Western white (P. monticola)	23	....	....	60	42	26	10	3
Spruce, Black (Picea mariana)	24	....	....	61	44	27	11	1
Spruce, Red (P. rubra)	24	73	48	60	43	27	12	1.5
Spruce, Sitka (P. sitchensis)	24	....	....	62	45	27	7	1
Spruce, White (P. glauca)	24	73	49	61	44	27	11	1.5
Tamarack (Larix laricina)	31	....	....	....	....	....	....	....
Western larch (Larix occidentalis)	28	....	....	58	....	....	11	.8
Western redcedar (Thuja plicata)	19	....	....	....	....	....	....	....

[1]Average values for samples tested at Forest Products Laboratory; wide variations may occur within single species.

SULFITE PULP YIELDS AND PULPING CHARACTERISTICS OF COMMON AND LESS-COMMON PULPWOODS[1]

	Density (oven-dry weight and green volume)	Oven-dry wood per cord[2]	Yield of oven-dry screened pulp Per 100 lbs. oven-dry wood	Yield of oven-dry screened pulp Per cord[3]	Ease of Pulping by usual procedures	Pulp characteristics: Fiber	Pulp characteristics: Color	Pulp characteristics: Bleachability	Remarks
	Lbs. cu. ft.	Lbs.	Lbs.	Lbs.					
Hardwoods									
Aspen	22	1870	49	855	No difficulty	Short	Light	No difficulty	Possible pitch
Beech	34	2890	44	1195	Slight difficulty	Short	Dark	Some difficulty	
Birch	34	2890	46	1250	Slight difficulty	Short	Medium	Slight difficulty	Possible pitch
Cottonwood	23	1950	49	900	No difficulty	Short	Light	No difficulty	
Maple	35	2970	45	1255	Slight difficulty	Short	Dark	Some difficulty	
Tupelo (gum)	30	2550	48	1150	No difficulty	Short	Light	No difficulty	
Softwoods									
Douglas-fir	29	2460	48	1110	Heartwood difficulty	Long	Dark	Heartwood difficulty	Red-yellow color
Fir, balsam	21	1780	47	790	No difficulty	Medium	Light	No difficulty	
Fir, grand	23	1950	49	900	No difficulty	Medium	Light	No difficulty	
Hemlock, eastern	24	2040	44	840	No difficulty	Medium	Medium	Slight difficulty	
Hemlock, western	25	2120	47	940	No difficulty	Medium	Medium	No difficulty	
Pine, jack	24	2040	45	865	Some difficulty	Medium	Medium	Some difficulty	Pitchy
Pine, red	27	2300	45	970	Some difficulty	Medium	Medium	Some difficulty	Pitchy
Pine, southern	30	2550	47	1125	Heartwood difficulty	Long	Medium	Heartwood difficulty	Pitchy
Pine, white	22	1870	46	810	Some difficulty	Medium	Medium	Some difficulty	Pitchy
Spruce, black	24	2040	48	920	No difficulty	Medium	Light	No difficulty	Possible pitch
Spruce, red	24	2040	48	920	No difficulty	Medium	Light	No difficulty	Possible pitch
Spruce, Sitka	24	2040	49	940	No difficulty	Long	Light	No difficulty	Possible pitch
Spruce, white	24	2040	48	920	No difficulty	Medium	Light	No difficulty	Possible pitch
Tamarack	31	2040	...	...	Heartwood difficulty	Medium	Dark	Heartwood difficulty	
Western larch	28	2380	...	...	No difficulty	Medium	Medium	Some difficulty	
Western redcedar	19	1610	...	...	No difficulty	Medium	Dark	Difficult	Red color

[1]Average values for samples tested at Forest Products Laboratory; wide variations may occur within species.
[2]Based on 85 cubic feet per cord. Logs 4 feet long with bark on, stacked pile 4 feet high, 8 feet long.
[3]Allowing 6 per cent barking, chipping, and fiber loss.

pulp per digester (digester yield) and the number of times the digester produces this amount of pulp in a day (digestion cycle). An optimum balance between these two factors is necessary.

A. Digester yield.—Maximum production from each digestion is obtained by charging the maximum amount of wood substance to the digester (wood charge) and getting the maximum amount of pulp of the desired quality from this wood charge (percentage of yield). This is not always possible because all variables are not under control. It is suggested that much can be done in controlling the factors affecting the wood charge (wood density, chip shape and arrangement, density of packing) and percentage yield (wood composition, wood removal, screenings, digestion variables).

B. Digestion cycle. — Normally a strong pulp demand can be met increasing number of blows per day. However, under current conditions it is desirable to emphasize digester yield over digestion cycle in order to obtain the maximum amount of pulp from a unit volume of wood.

III. Sulfiite Mill Fiber Loss

The operations of chip preparation, pulp washing, pulp screening, and bleaching can bear the close scrutiny of the pulp mill operator in the interest of increased pulp production of reduced fiber loss.

Lt James Wollenberg Wins Medal for Rescue

● For aiding in the rescue of 200 persons from a ship which foundered in Aleutian waters last winter, Lt. (jg) James R. Wollenberg USNR, San Francisco, has been awarded the Navy and Marine Corps Medal at sea.

The 24-year-old officer is the son of Harry L. Wollenberg, president of the Longview Fibre Company, San Francisco. Young Wollenberg left the University of California a year ago, prior to graduation from the law school, and enlisted in the Navy as an apprentice seaman.

The citation read by Vice-Admiral Thomas C. Kinkaid, commander of the North Pacific Area, said Lt. Wollenberg was one of a power boat crew which "narrowly escaped almost certain destruction many times" during the rescue while moving into extremely dangerous positions among the high seas breaking over the foundering ship and adjacent rocks.

Office for Mrs. Berney

On October 5, Mrs. Vera Berney, women's personnel supervisor, held open house in her new office, a small extension of the first aid building back of the main office at the Camas, Wash., mill of Crown Zellerbach Corporation. Her simple, but attractively decorated, headquarters were much needed as the Camas mill now employs more than 500 women under her supervision.

Applications for Pulp and Paper In the Plastics Industry

By R. U. HASLANGER*

THE technology of resins and plastics may be divided into two broad fields: (1) the thermosetting resins which under the influence of heat undergo a chemical reaction to give an insoluble and infusible product, and (2) the thermoplastic resins which soften or become plastic when heated and harden when cooled, and which do so reversibly. Included in the thermosetting group are the phenolic, urea, and melamine resins. The thermoplastics include the cellulose ethers and esters, polystyrene, polyvinyl chloride-acetate, vinylidene chloride, the acrylates, and a number of synthetic fibers.

The thermosetting resins are used as surface coatings and adhesives, or are combined with fillers to produce molding compounds or laminates. Paper makers are familiar with the use of urea and melamine resins to improve the wet strength of paper.

The fillers commonly employed are cellulosic in nature and include alpha cellulose, wood flour, macerated cotton fabric, and cord in the molding compounds, and paper sheets and cotton fabric of various weights and weaves in the laminates. These fillers contribute to the mechanical strength of the finished article depending on the strength and form of the filler. Mineral fillers such as mica, and asbestos are employed to contribute electrical properties or heat resistance. The fillers also influence the moldability, surface finish, water resistance, resistance to chemical attack, and cost of the finished article. Molded thermosetting compositions are generally used for structural or semi-structural applications, for chemical or electrical applications, or where serviceability at temperatures from—60° F to 160° F is required. Malamine and urea resins can in addition be produced in light colors, and, as a result, find considerable use where color is important.

The thermoplastic resins are also used as surface coatings, adhesives, and molding compositions and are in addition available as sheets, rods, tubes, and extruded forms. Fillers are not ordinarily used with the thermoplastics. Compatible plasticizers are often added to obtain specific properties, such as flexibility, resistance to heat distortion, and improved electrical properties. These materials are seldom used in structural applications because of their thermoplastic nature, but they do find wide application in semi-structural applications and decorative uses. Most of the materials in this group can be produced in clear transparent form, and find numerous outlets because of this characteristic. The paper industry is using substantial quantities of these resins for paper surfacing, as heat sealing adhesives, and as adhesives.

THE TWO LEADERS IN A DISCUSSION of pulp and paper uses in the manufacture of plastics, which featured one of the round tables at the TAPPI - sponsored Army - Navy Conference in Chicago on September 22 were (left) DR. ALFRED H. CROUP, Physicist, Hammermill Paper Company, Erie, Pa., and (right) R. V. HASLANGER, Plastics Division, Monsanto Chemical Co., Springfield, Mass., who is the author of the article on this page.

From the pulp and paper makers point of view, the plastic materials may also be divided into two groups: (a) those materials which employ pulp or paper as a filler in combination with the resin—group 1 above —, and (b) those materials which employ alpha cellulose as a basic raw material in the manufacture of the resin — cellulose nitrate, cellulose acetate, ethyl cellulose, and several of the synthetic fibers—group 2 above.

Alpha cellulose from wood pulp is used as the filler in both urea and melamine molding compounds. The molding composition is comprised of approximately equal parts by weight of resin and filler. Alpha cellulose is preferred to wood flour or cotton flock, commonly used in phenolic molding compositions of comparable grade, because of the improved color obtained in the finished product. A high degree of purity, whiteness and uniformity is always specified. Maximum strength is essential in the finished product and is influenced by the strength of the alpha cellulose used.

Alpha cellulose is not used in phenol-formaldehyde molding materials. Wood flour produces a comparable grade material at a substantially lower cost.

A ligno-cellulose filler has recently been introduced for phenolic molding compositions which should be of interest to the pulp and paper maker. This material is prepared by the acid hydrolysis of wood chips, or by digesting wood chips in alkali or acid medium and precipitating on the chips lignin recovered from waste cooking liquors. The resulting product is washed free of water solubles, dried, and ground. The product contains from 35 to 45% of lignin depending on the method of preparation. These lignin enriched materials when used in combination with phenolic resins serve both as filler and as an extender for the phenolic resin. This extended material is at present undergoing investigation by the resin manufacturer, the molders, and the suppliers of the lignin enriched material from the point of view of economics, moldability, physical and mechanical properties, and appearance, as compared to standard molding compositions of phenol - formaldehyde and wood flour.

Special papers are being used for the production of paper base laminates. The paper is impregnated with a solution of phenolic, urea, or melamine resin, the solvent is removed, and the impregnated paper is then molded in flat sheets or relatively simple contours. The papers must be carefully prepared so that they will absorb the desired amount of resin. Since the paper contributes strength to the molded article, the paper must have the maximum strength obtainable in both directions. The melamine and urea resins are used for light colored surfaces, or for thin translucent moldings. Therefore, bleached papers with a high degree of whiteness are used with these resins.

Recently, exceptional strengths have been developed in a paper for preparing laminated and contoured parts for structural applications. This new product is finding considerable use in the war effort as re-

*Research Dept. Plastics Division, Monsanto Chemical Company.

placements for some of the strategic metals.

The lignin enriched material previously discussed has also been used as a laminating material—both with and without the use of additional phenolic resin. The digested chips instead of being ground in a mill are put through the paper making process to produce a sheet. The sheet is then impregnated and molded, or molded as is, depending on the application.

Alpha cellulose is the basic raw material in the production of the thermoplastic cellulose esters and ethers previously referred to. The color and haze of these cellulose plastics are directly dependent upon the cellulose from which they are made. The majority of these resins for transparent and colored plastic applications are, therefore, made from cotton linters. Cotton linters 98-99% alpha cellulose, give good yields, and produce a uniform product with low haze and excellent color. The cost, however, is somewhat higher than for bleached sulfite pulp.

Therefore, in lacquers where haze is not so important, wood pulp, having an alpha cellulose content of 88% or higher, is used. Uniformity of the pulp and freedom from impurities is most important. Other important specifications are:

1. viscosity—10-50 seconds by cuprammonium method
2. ash—not greater than 0.1%
3. NaOH solubility—not greater than 19% in 7.14% NaOH
4. alpha cellulose—88% minimum

Sulphate and soda pulp are not recommended because they give poor color, and the softer, shorter fibers give low yields.

SUMMARY AND CONCLUSIONS

Alpha cellulose from wood pulp is used in thermosetting molding compounds because of color requirements. It is used in laminates because it contributes strength and in some instances again because of color. Lignin enriched fillers are being investigated because of the plastic properties contributed by the lignin.

In the cellulose plastics, alpha cellulose from sulfite pulp is limited to applications where haze and color are secondary considerations. It possesses an advantage in these applications, however, from a cost angle.

Considering these applications, how does the plastics industry stand as a potential customer of the pulp and paper industry? The total volume of the plastics industry is small indeed when compared to the pulp industry. The total production of plastics—exclusive of synthetic rubber, synthetic fibers, and similar border-line fields—was in 1941 approximately 300 million **pounds,** as compared to pulp production of 11½ million **tons** in 1942. In other words, the total plastics industry production is only one per cent of the pulp production. The total volume of pulp and paper used in 1941, as fillers for the thermosetting resins and as raw material for cellulose nitrate, amounted to about 25 million pounds or only about 0.1% of the pulp production.

Mills May Be Able to Acquire More Equipment in 1944

● A high-ranking army general has said that if the pulp and paper mill equipment companies keep up their production of shipbuilding and other special war contracts for just one more year, they may then be able to resume the manufacture of much-needed pulp and paper mill machinery and equipment. He indicated mills would not have to wait for the end of the war.

The general was not named but he apparently was "in-the-know" and was quoted as an authority by Allan Hyer, chief of the distribution section, Pulp and Paper Division, War Production Board. Mr. Hyer is on leave from his position as sales manager, Black-Clawson Company, Hamilton, O., to carry on his important wartime job in Washington.

Following is part of a speech made by Mr. Hyer September 13 to a luncheon of representatives of companies which produce equipment and supplies for pulp and paper mills but many of whom are now making cargo and warship and war equipment parts):

"We in the W.P.B. have been notoriously stingy in the distribution of controlled materials and equipment, but it must be kept in mind that we have not yet reached the peak of war production. There will be more planes, more ships, more trucks, more of everything and there can be no let up of this demand for several months. Occasionally we read of some program that has been reduced, such as tanks, but these changes are not reflected in the material supply.

"A few days ago Art Wakeman (chief of the Pulp and Paper Division, W.P.B.) and I called on one of the topside officials to ask a few questions about the prospects for more material. We were told about a shortage of certain units of equipment, of the frantic efforts to get more production, of the scarcity of materials. We listened to one end of a telephone conversation with a general on the other end. The call was made to get an answer to one of our questions. The whole conversation was recorded and later it was played back so that we could hear the reply. Briefly it was this: 'If we can keep up our production, if we can hold the line for one more year, maybe it will be possible to release more materials.' That's the army's answer and they are running the show. Every change in the war strategy means more material and still more material, and so far we have never received a full percentage of our controlled material requirements, even for maintenance, repairs, and operating supplies.

"Other materials and supplies are no better. The applications, telephone calls, telegrams and interviews, coming into our office in one day make a veritable roll call of everything used in the manufacture of paper, and each one is important in carrying on paper productions. One manufacturer must have carbon rings if he is to continue to supply this very necessary part for steam joints; another needs copper or more steel; a paper mill must have a new unit of equipment—a motor, a washer, a pump; a waste paper dealer needs a new baler; it might be a warehouse or a new roof or new rest room facilities because of female employment; a felt manufacturer needs cotton yarn; starch, casein, titanium; a new boiler, a digester, filtration equipment, and many others that are left out for lack of space not because they are less important. Breakdowns that call for emergency repairs must be handled immediately.

"Each case must be processed individually. Each is decided on its merits according to the materials involved, and the results that will be obtained. If the request indicates an expansion, we must weigh it against the industry position of that certain grade or product, and if facilities are available elsewhere that can absorb the additional tonnage, the answer is no. You have been called on to supply your products for war purposes, rather than for paper mills, which for many of you is the major interest. For instance, a group of about 40 equipment manufacturers producing about 80% in dollar value of the industry total have been operating between 85-90% on direct war products. A few of the larger companies have gone all out with 95%.

"Recently we have had inquiries from several manufacturers who are interested, naturally enough, in postwar activities. Although we are heartily in accord with the idea, it is definitely premature. A great amount of thought is being given to postwar planning, but immediate action from a manufacturing point of view appears unlikely for two reasons. One of these should be sufficient. Our position on the war front is by no means secure, and we must not relax for one minute from the job at hand. The other reason is the lack of material."

Weyerhaeuser Man In Air Corps Intelligence

Lieut. William M. McNair, on leave as a district representative in the sales department, Pulp Divison, Weyerhaeuser Timber Company, 400 West Madison Avenue, Chicago, has returned to this country after serving as a United States Army Air Corps Intelligence officer on islands of the southwest Pacific.

Lieutenant McNair is now taking an advanced course in air corps intelligence at Harrisburg, Pa.

Blood Plasma Boxes Are Made Up With Care

A request of the Army and Navy for 4,000,000 pints of blood for the production of plasma this year presented an opportunity for the paper industry to perform an important service in the war effort. In fact, it would not be possible to deliver the needed quantities of blood plasma to far distant war fronts without the essential paper cartons.

Paper packaging produced by your mills saves cargo ships and airplane space and the smaller and lighter weight containers make it possible to carry quantities of blood plasma to our boys in uniform and to our allies.

Very active in the production of cartons to hold the blood plasma kits is the Los Angeles plant of Fibreboard Products Inc., located at 4444 Pacific Blvd. One good-sized section of the plant at present is turning out many thousands of these special type containers. In view of the fact that there are seldom any storage facilities at distant points to which the blood plasma is sent, the packages are often left out in the open air in areas where rainfall is abundant and the humidity is high.

To afford as much protection against the weather as possible, all materials entering into the containers are paraffine treated for waterproofness. The materials themselves are much stronger than those used for ordinary setup boxes, and are similar in quality to the boards used in paper shipping cases. Specifications established by the American Red Cross are used in their manufacture.

The blood plasma cartons are approximately 9 by 7 by 4 inches in dimensions and have a corrugated board liner as further protection for the two glass bottles in which the plasma and the distilled water are placed. There are four principal steps in the manufacturing process: First is the scoring; second, sealing the corners on a Knowlton staying machine; third, covering the cartons by the use of Smith and Stokes machines; and finally the assembling of the parts.

Each carton when packed holds a bottle of blood plasma, another bottle containing distilled water, a needle to open a vein and the rubber tubes to run from the plasma to the insertion in the vein. The plasma bottle even has a cloth string tied around it so that in emergencies it can be tied up on a branch or tree when the injection is made. The

LABORATORY WORKER SHOWING THE COMPLETE BLOOD PLASMA KIT and the container made at the Fibreboard Products Inc. plant, Vernon Division, Fibreboard Products Inc., Los Angeles.

EVA OLSON, of Vernon Division, Fibreboard Products Inc., is shown here running the staying machine in the manufacture of blood plasma boxes.

PEGGY HUGHES AND JENNY SMITH, at the Vernon Division, Fibreboard Products Inc., operating the Stokes machine in one of the steps of manufacturing the blood plasma containers.

blood transfusion process is simple and the package is complete in all details.

Blood plasma, after going through an intricate series of processes, is made ready for delivery after being frozen, dehydrated and sealed hermetically in a glass flask. It is restored to liquid form by the addition of distilled water when needed for emergency transfusions.

Old Timers Organized

● An Old Timers' Club for personnel of the Everett Pulp & Paper Company, Lowell, Wash., who have been in the service of that company for more than 25 years, has been organized. William J. Pilz, president of the firm, is the first president of the club.

A. Winklesky is vice president, Louis Rosick, treasurer, and H. D. Buckley, secretary. Each member is given a gold pin with a diamond added for each additional five years of service. About 80 are eligible for membership.

Four Camas Men Missing On Flights

● Four men from the Camas, Wash., mill of Crown Zellerbach Corp., are missing on flying missions in far distant war zones. It is possible one or more may have landed safely in enemy territory.

Latest one reported missing is Technical Sergeant Michael B. Ludwig, Liberator plane gunner, missing in action in the Asiatic area Since Sept. 15. A former employe in the sulphite mill, he was serving with the air forces in China.

Two others lost on flights were Staff Sergeant Leon Ochs, who worked in the chipper plant, and Sergeant Curtis Asher, who worked on one of the paper machines.

Some time ago it was reported in these columns that Lieutenant L. H. Conway, a pilot who had formerly been a part time worker at Camas, was missing on flight in the South Pacific.

Sergeant Ochs, serving as a mechanic in a Flying Fortress, was missing after a bombing raid over Germany on July 28. He has a wife and baby daughter only a few weeks old. His mother lives in Portland, Ore.

Sergeant Asher failed to return after a flight over Hamburg, Germany, July 25. He was waist gunner in a B-17 bomber.

BLOOD PLASMA BOXES are being stacked here at Fibreboard plant in Los Angeles (Vernon Division) by ULA SUMMERS (left) and EVA TOTTEN.

Sergeants LEON OCHS (left) and CURTIS ASHER, U. S. Army, both former employes of the Camas, Wash., mill of Crown Zellerbach Corporation, failed to return to their bases on separate bombing raids over Germany in July. It is possible they may be prisoners in Germany.

Jim Hodson's Brother Is In Radar Service

● James Hodson, chief electrician, Soundview Pulp Company, Everett, Wash., is proud of his "kid" brother, George Hodson, U. S. Army Signal Corps, who is trained in the special Radar service and is on duty in Florida.

Jim marvels that his brother, who was a school-teacher in Seattle, should become an expert in Radar, which means radio-detecting-and-ranging and is one of the war wonders made possible by the electron tube. Ultra high frequency waves traveling with the speed of light are focused to scan air and sea and detect the enemy in fog, storm or darkness. Radar was instrumental in saving England in the air blitz and is a powerful aid to the United Nations' offense.

Reversing his brother's experience, Jim's guess is if the Army took him it would make him a teacher.

Field's Son a Prisoner

● Pilot Officer John Terrence Field, son of O. W. Field, manager of the Vancouver branch of Sidney Roofing & Paper Co., recently reported missing while with the R.C.A.F. over Sicily, has since been reported a prisoner of war.

Chester A. Fee Joins Pacific Pulp & Paper Industry

● Chester A. Fee, author, former University of Oregon professor, former advertising manager of a large oil company and member of a well known Oregon family, has joined the staff of PACIFIC PULP & PAPER INDUSTRY as regional editor with headquarters at 1303 Terminal Sales Bldg., Portland, Ore.

Mr. Fee is the brother of a prominent jurist in Oregon and for a number of years operated a large farm in eastern Oregon.

He succeeds Robert M. Evenden who has accepted a position as director of the accident prevention division of the Oregon State Industrial Accident Commission, with his headquarters in Salem. Mr. Evenden has long been keenly interested in safety work, and was experienced in this activity before joining this magazine's staff.

Wage Conference Approves $2,000,000 Payroll Increase

Highest rates in history are endorsed at Portland meeting, providing for five cents an hour increase for employes with more than six months service.

● Wage increases and adjustments estimated to bring added income of nearly two million dollars annually for more than 14,000 pulp and paper mill employees in Oregon, Washington and California, were formulated in Portland, Ore., at the September 13-17 bargaining committee meetings of the Pacific Coast Association of Pulp and Paper Manufacturers and the International Brotherhood of Pulp, Sulphite & Paper Mill Workers and the International Brotherhood of Papermakers, American Federation of Labor affiliates.

These committees represented organized workers from 34 Pacific Coast mills and plants covered by a uniform labor agreement, which has been operative for nine consecutive years. They had met three months earlier in Portland but after a few days of discussion they adjourned for study of certain matters.

If these wage increases are approved, they will establish a new high standard of wages for the industry, higher than the wages paid anywhere else in the world.

A later report announced that the Pacific Coast members of the AFL unions ratified the decisions of the wage conference by a 5128 to 2040 referendum vote.

The increases and adjustments which require approval by the War Labor Board will be jointly applied for by the two International Unions and the employers. Whatever is approved will be made retroactive to June 1, 1943 with respect to employees on the payroll as of the date of approval by the War Labor Board, and also to former employees who make application to the companies within 60 days of approval by the War Labor Board. Employees on leave of absence in the armed forces and Merchant Marine who are eligible under the adjustment will be mailed checks without formal application.

John P. Burke, Fort Edward, New York, president of the International Brotherhood of Pulp, Sulphite & Paper Mill Workers, and Ernest Lambton, Albany, New York, vice-president of the International Brotherhood of Papermakers, were in Portland to join in the deliberations with local union delegates for all mill communities.

John Sherman, Tacoma, vice-president of the Sulphite Workers, was chairman of the negotiation meetings.

Wage changes are as follows:

Effective June 1, 1943 the hourly wage of all employees having more than six months' service will be increased five cents per hour.

Employees having less than six months' service have previously worked under a 2½c hourly differential which is to be discontinued.

The base rate for male employees will become ninety cents per hour and base rate for female employees on women's jobs seventy-seven and one-half cents per hour.

The beginners' rate for women starting on men's jobs which they fully take over will be eliminated and women starting on such jobs will receive the rate for the man's jobs.

Vacation pay will be liberalized for the duration by increasing the basis for computing it from 40 to 48 hours. The eligibility requirements for vacations will be further liberalized.

The companies agreed to make payroll deductions for current union dues of those employees who sign the necessary authorization, each local union to decide whether to avail itself of the payroll deduction plan for dues collection.

If approved, these payroll increases will result in a 1943 payroll for the west coast industry which will break all previous records and become the highest per capita.

Last year a ten cent increase for those with over six months' service was granted which brought average hourly earnings of productive employes in the United States Pacific Coast mills to $1.06 cents, and weekly earnings to $43.71, compared to 81 cents and $33.55 in other United States regions.

HOQUIAM DECISION

The National War Labor Board in Washington, D. C., on October 9 dismissed the application of the local CIO union in Hoquiam, Wash., to represent the employes of the Grays Harbor division of Rayonier Incorporated as bargaining agent.

The board decided that the Pacific Coast pulp and paper industry's uniform labor agreement of ten year's standing with the AFL unions was a proper industry-wide agreement, making the AFL unions the bargaining agents for all the member mills.

This decision had been awaited since the April 3-13, 1943, work stoppage resulting from the dismissal of ten CIO men from the Hoquiam mill under the terms of the uniform agreement. The men were later restored to their jobs, pending the labor board decision.

Bob Petrie Returns To Pacific Coast

Robert T. Petrie, Pacific Coast representative of Black-Clawson Company and its Shartle Brothers Machine Company and Dilts Machine Works divisions, has returned to his Portland, Ore., home (3206 N. E. 42nd Ave.) after an extended stay at Hamilton, O. He is at present connected wtih the Albina Shipyards at Portland.

British Columbia Payrolls Reach All-Time High

● Payrolls in British Columbia's pulp and paper mills during 1942 totalled $8,824,524 for an all-time high, and $1,856,792 higher than in 1941, according to statistics recently issued by the provincial department of labor. Payrolls for all the province's forest industries totalled $52,759,857 or $6,531,995 higher than in the previous year.

Average full week's wages for men engaged in the pulp and paper industry was $33.92 in 1942, compared with $32.13 in 1941, $29.84 in 1940 and $26.54 in 1939.

Returns from thirteen companies in 1942 showed that salaries in the industry to officers, superintendents and managers amounted to $644,524, to clerks, stenographers, salesmen, etc., $777,587, and to wage-earners, including piece workers, $7,402,413.

Humphreys Takes Over Sorg Mill Direction

● Herve D. Humphreys, the new manager of Sorg Pulp Company at Port Mellon, B. C., took over his new duties during the past month and told Pacific Pulp & Paper Industry that the company is now making 3,000 tons of kraft pulp per month its immediate objective. At present the mill is producing about 2,000 tons.

Before coming to the Pacific coast, Mr. Humphreys was treasurer of the Dryden Paper Co in Ontario, and he severed a 25-year association with that organization to accept the Sorg appointment. Mr. Humphreys will spend most of his time at Port Mellon rather than at Vancouver, which in the past has been the headquarters.

Mr. Humphreys takes over the management of this subsidiary of Sorg Paper Company of Middletown, O., at an interesting point in its career. Arrangements have been completed for the Nelson Spencer lumber interests to operate the Sorg sawmill under contract, and this setup is expected to give the whole plant a more economical production through fuller utilization of the logs.

The Sorg Pulp Company has recently installed an 84-inch eight knife Carthage Machine Company chipper and a 600-ton hydraulic press for preessing pulp bales. The press was supplied by Hydraulic Machinery Company.

A U-bar drum barker manufactured by Fiber Making Process Company of Chicago was put into operation early in the summer.

A large part of the kraft pulp produced at the Port Mellon mill is being used for the manufacture of waterproof multi-wall paper bags in which flour and other cereals are packed for the armed forces.

Mr. Humphreys reports that Port Mellon is currently the scene of considerable activity in house construction. Sixteen new houses were built during the past summer, as well as portable bunkhouses. The company employs about 250 men in the pulp plant and sawmills and about 50 women are also working in various parts of the mill. In fact, Sorg was one of the first pulp mills on the coast to employ women in substantial numbers in the operating departments.

Mr. Humphreys succeeded Herman Simpson, who is now connected with Western Gear Works in Seattle.

Boeschenstein Coordinates Pulp and Paper With Lumber in Washington Reorganization

● The most important development in months affecting the pulp and paper industry is the reorganization of the Pulp and Paper Division of the WPB in Washington. As a result of this action some of the load has been taken off the shoulders of such men as Art Wakeman, chief of the Pulp and Paper Division; David Graham and others and a closer liaison will be effected between the Pulp and Paper Division and all the government agencies in Washington. These two achievements should have beneficial results for the industry.

Harold Boeschenstein of Perrysburg, Ohio, 47-year-old president of Owens Corning Fiberglas Corp., was appointed coordiator of four WPB bureaus—lumber, pulp and paper, containers and printing and publishing.

New divisions have been set up. There is now a Paper Division, a Paperboard Division (also a Containers Division for other kinds of containers will remain in existence), an Office of Pulp Production (headed by A. B. Hansen, deputy director of the Pulp and Paper Division) and an Office of Pulp Allocations (headed by Mr. Graham, chief of the Fibrous Materials section of the Pulp and Paper Division).

Mr. Wakeman becomes a special consultant to Mr. Boeschenstein and Mr. Graham and Mr. Hansen will report directly to Mr. Boeschenstein. The entire reorganization is aimed primarily toward increasing pulpwood production.

This is Mr. Hansen's direct responsibility and his division has been strengthened by the appointment of several new regional representatives and a decentralization of his work.

Heretofore there had been only one regional representative of the Pulp and Paper Division. He is E. J. Hayes, former log buyer for the St. Regis kraft mill in Tacoma, now closed, who has held that position in the Pacific Northwest since December 5, 1942. It is now found advisable to have regional representatives in other sections of the country where the acute shortages of logs is being seriously felt by the industry.

As a further move in the campaign to "hold the line" in the battle to keep mills supplied with logs, it is hoped that Mr. Hansen will be able to visit the Pacific Northwest shortly for a first hand study of special logging problems here. Among these are need for heavier equipment, of trained loggers to fall and buck our big trees, and of a closer check on the disposal of hemlock. Pulp logs come out of the woods with sawlogs in this country and the destination of hemlock is often uncertain. Only about 30 per cent has been going to pulp mills.

Drastic Newsprint Cut Seen

● A possibility of a further reduction in permitted consumption of newsprint in November and December is foreseen in a recent statement of the American Newspaper Publishers Association.

This would be in addition to the average five per cent cut that went into effect October 1. This cut was on a sliding scale, ranging up to a full ten per cent for users of 500 tons or more a quarter. It was required because many newspapers had not fulfilled the general ten per cent cut ordered.

A 52 per cent cut in newsprint next year may be necessary unless 38,000 men were added to forces cutting timber, according to a gloomy report of the government's combined pulp and paper committee. E. W. Tinker, executive secretary of the American Paper and Pulp Association, said "we can't keep the paper industry going without some immediate action."

Zellerbach Named Advisor

● The U. S. government announced that its useage of paper has been reduced 25 per cent.

Chairman Donald Nelson of the WPB predicted reduced newsprint shipments from Canada next year.

The Printing and Publishing Division announced a further cut in permitted use of book paper on January 1 may be expected. Book paper already has been cut ten per cent.

Adding to the duties he already has in Washington, J. D. Zellerbach, president of Crown Zellerbach Corporation, San Francisco, has been named with five other representative newsprint manufacturers to a new OPA Newsprint Industry Advisory Committee.

HERE ARE TWO MEN WHO ARE CALLED UPON TO PERFORM A MIRACLE —WITH THE AID OF LOGGERS AND MAKERS OF PULP . . . They are: (left) ARTHUR G. WAKEMAN, former Production Manager, Fox River Paper Company, Appleton, Wis., and Director of the Pulp & Paper Division, War Production Board, who is now to be Consultant to HAROLD BOESCHENSTEIN, Coordinator of all Cellulose Industries.

(Right) A. B. "AG" HANSEN, Deputy Director of the Pulp & Paper Division, WPB, especial handling pulp and pulpwood production problems. He is on leave as President of Northern Paper Mills, Green Bay, Wis.

All these gentlemen have to do is produce more pulp and paper this year with less manpower and materials. Receipts of pulpwood during the first six months of 1943 were 24 per cent below the same period in 1942 and mill inventories declined 32 per cent. Demand for paperboard containers, rayon pulp and all kinds of other critical pulp and paper products have increased.

OPA Advisory Committee Starts Operations

● A woodpulp industry advisory committee to the Office of Price Administration—a group that fills a long-standing need in Washington—has completed its organization and working schedule. This is one of the most important committees for government assistance created since the war began.

Representatives of firms with western interests on the committee comprise one-third of the membership. They are:

Arthur W. Berggren, assistant to the vice-president, Rayonier Incorporated, Seattle.

R. M. Buckley, eastern representative, Soundview Pulp Company, Everett, Wash.

L. K. Larson, manager of sales, Weyerhaeuser Timber Company, New York.

W. J. Dixon, vice-president and secretary, St. Regis Paper Company, New York.

Also a member is Oliver M. Porter, executive director of the U. S. Pulp Producers Association.

The first meeting of this committee was held in Washington, August 19.

Big Fir-Tex Order

● Fir-Tex Insulating Board Company of St. Helens, Ore., supplied a grand total of 5,252,320 square feet of insulating board to newly built Vanport City, the nation's largest war-housing project, which lies between Portland, Ore., and Vancouver, Wash.

Vanport City, or "Kaiserville," as it was nicknamed by the Portland, Oregonian for the shipbuilding family of Kaisers, shelters 40,000 residents and is the fifth largest city in the Pacific Northwest.

Delicate Problems Face Unions And Management in War Bond Drives

Fibreboard mill at Port Angeles finds a way to stimulate purchases of more than ten per cent without embarrassing any individuals ' ' ' Experiences of mills show that employes must first understand importance of buying bonds.

● Many Pacific Coast mill executives have been in a quandary as to what methods to adopt in order to stimulate payroll deductions among employes for the purchase of war bonds. It is unquestionably a delicate problem for both management and labor. It is generally agreed that management and labor should take joint action in dealing with it, except where it might be found advisable for unions to handle it exclusively.

One mill manager, in discussing this problem with a representative of PACIFIC PULP & PAPER INDUSTRY, said the most important thing to do is to get the employes to really understand why they should buy bonds to the limit of their capacity. He suggested down-to-earth talks on the war by outside speakers—persons who really know their stuff, as, for example, soldiers and sailors who have seen action or men who have been in contact with Axis business and diplomatic methods—rather than the usual, high pressure sales talks.

"When they really know what it's all about, they will buy bonds," he said.

The big problem in most mills has been the question of whether to show on time cards how much employes are deducting for bonds. If not done in the right way, the marking of time cards can cause a lot of unnecessary trouble.

Because it might be helpful to management and union executives in other mills, the experience of the Port Angeles, Washington, division of Fibreboard Products Inc., is noteworthy.

Colored Stars Used

At this mill, the time cards of employes who invest ten or more per cent of their pay in bonds are marked by blue, green and red stars. Blue represents an investment of ten per cent, green shows deductions of ten to fifteen per cent and a red star goes to those who invest more than fifteen per cent.

The use of these colored stars was the idea of H. V. Morriss, assistant office manager, after he had visited another mill and seen that it merely designated by a 10 per cent mark those employes who bought at least that much in bonds. Mr. Morriss' idea was to stimulate larger purchases than 10 per cent without publicizing exact amounts purchased.

But it was not as simple as this. C. V. Basom, the resident manager, first brought into consultation the official unions' administrative and grievance committee at the mill. He decided, of course, that whatever was done, union support was necessary.

It still seemed like too risky an idea until Mr. Basom decided to bring to the mill none less than the top man in the bond sales campaign for the entire state of Washington. It happened that this man, representing the U. S. Treasury Department, had long experience in the U. S. diplomatic service in Europe and knew his stuff regarding the Axis. He readily accepted the invitation.

After his calm but most instructive address to the mill employes, there was no more doubt about marking the time cards. The employes were ready and enthusiastic for it.

Curiously, there have only been a round dozen or so of employes whose cards have been marked with green stars—showing purchases of ten to fifteen per cent. It appears that if an employe decides to go over ten per cent he or she would prefer to go "whole hog" and get a red star.

Fir-Tex Men In Service

About 100 former employes of Fir-Tex Insulating Board Company of St. Helens, Ore., are in the armed services. This is an unusually high proportion from a mill which normally employs about 200. The unusual permanent plastic honor roll at Fir-Tex was reproduced in a photograph in this magazine in the September issue.

Elmer Clites, employe of the Stockton Division, Fibreboard Products Inc., who for years has been Stockton's outstanding golfer, is now the California amateur champion. Elmer won the state championship tournament at Pebble Beach September 8-12

Working up to his quarter final match, he opposed none other than Lt. "Bud" Ward of Spokane, twice national amateur champion. This match, witnessed by a large gallery, was the best of the turnament. Elmer came from behind on the 18th hole with a birdie to tie the match. Both took pars on the next hole and Elmer came back with a birdie on the 20th to win. He won his next two matches easily.

FACTS ABOUNT PULPWOOD

● The following rough percentages show how our production of pulpwood will be used in essential war materials this year, according to the War Activities Committee of the Pulpwood Consuming Industries:

25%	Containers	The war uses for which cover shell casings, containers for shipment of ammunition and food, blood plasma, packing of field rations, etc.
25%	Wrapping Paper	Used for bags and wrappers by our armed forces and essential war industries.
6%	Smokeless powder	As more of our armed forces contact the enemy the requirements for smokeless powder production will increase.
5%	Rayon	Used for parachutes, military clothing, etc.
5%	Lend-lease and Good Neighbor Allotment	Most of this pulpwood is shipped in its converted form —pulp—to our allies.
2%	Hospital and Sanitary Waddings	The armed forces are demanding increasing amounts of this production for use in battle front hospitals.
5%	Structural Boards	For the overnight erection of army cantonments, emergency defense housing, etc.
9%	Sanitary toweling and tissues	Serious shortage of these products has placed them on the "essential" list.
9%	Printing Papers	Used for ration books, target paper, war posters and pamphlets, in addition to all domestic periodicals and job printing.
6%	Newsprint	Lack of pulpwood may reduce this estimate.
6%	Writing and fine papers	In addition to growing inroads by the armed forces upon this bracket, the executive direction and planning of the war constantly requires increasing supplies.

Canadian Pulp Log Exports Total Only 30,000,000 Feet for 1943

THIRTY million feet of British Columbia hemlock logs have been released for export to Puget Sound mills by the Canadian Timber Control so far this year, and it is unlikely that this volume will be exceeded during the balance of the year.

(Release of 15,000,000 feet of pulp logs—the first to cross the line since the Canadian embargo went into effect September 1, 1942 was reported in the July issue of PACIFIC PULP & PAPER INDUSTRY. Earlier in the year the Timber Controller had contemplated releasing five or six million feet per month. Prior to the embargo, pulpwood exports averaged 150,000,000 feet per year.)

Production of all log species in British Columbia continues to be considerably less than in 1942 although during the past summer it was possible for most of the logging camps to continue in production without interruption due to an unusually favorable fire situation. Production of all species of timber in British Columbia in August of this year amounted to 242,000,000 feet compared with 228,000,000 feet in August of 1942, but the production for all 1943 up to and including August has been only 1,700,000,000 feet, compared with more than 2,000,000,000 feet during the corresponding period of 1942.

Hemlock cut in the woods of British Columbia was approximately the same last August as in August, 1942—roughly 50,000,000 feet, and balsam 14,000,000 feet, but the total cut of hemlock this year up to and including August has been only 333,000,000 feet, compared with 385,000,000 feet at the corresponding date a year ago. Log supply for British Columbia pulp and paper mills is still far from abundant, and the release of logs for export was made possible only through the cooperation of Pacific Mills, Ltd., which allocated an equivalent volume of logs from its stockpile for the use of other mills less fortunately situated.

The log supply situation in British Columbia has been affected by several factors this year: 1. The unusually severe winter of 1942-43 which curtailed logging operations for several months; 2. The critical shortage of manpower for logging camps; 3. Increased utilization of spruce for aircraft manufacture; 4. Greater diversification of pulp production by British Columbia mills, some of them engaged in high priority materials such as dissolving pulp for war purposes; 5. Increasing demand for hemlock lumber, due in part to the aggressive promotion of kiln-dried lumber by B. C. Manufacturing Co. at New Westminster and other sawmill organizations.

The logs permitted for export will be shipped on a pro rate basis by logging companies which engaged in that trade before the embargo was established.

Douglas Fir Exports

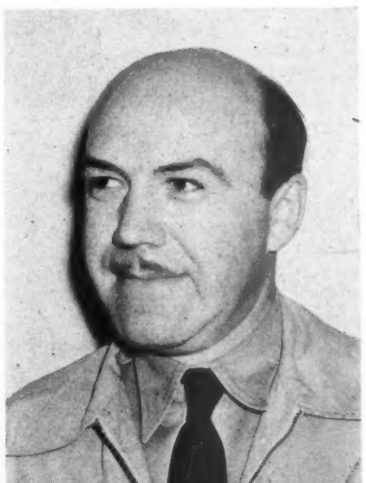
For the first time in many months the Canadian Timber Control has authorized the export of some Douglas fir logs to the United States from crown grant timber. A maximum of 4,000,000 feet of logs, other than peelers, will be permitted, but it is doubtful whether this total will be attained this year owing to pressure of Canadian demand.

Timber Controller A. H. Williamson recently referred to the controversy over the logging of Sitka spruce. In Canada, he said, "every incentive toward increased production, irrespective of cost, has been given, with the result that Sitka spruce is being logged in Canada at such a rapid rate as to practically exhaust the total supply of standing timber of this type within three years. This has enabled Canada to become the major supplier of Sitka spruce aircraft lumber to Great Britain.

"I mention this because, during the controversy in the United States over the question of logging in national parks, it was suggested that Canada might send Sitka spruce logs to the United States so that the United States could increase shipments of aircraft lumber to Britain. While it would be financially profitable for Canada to sell its logs for good United States funds, which would in turn be sent in the form of aircraft lumber to Britain under lease-lend, this would not assist the war effort but would only result in a reduction in Canada's shipments to Britain corresponding to the amount sent to the United States.

"Canada is in the lease-lend business, too—we call ours mutual aid—and considering our population and resources, the contribution we have made either in the form of cash gifts or mutual aid compares favorably with the marvellous contribution by the United States through lease-lend. Canada, of course, has never been a recipient of lease-lend aid.

"The Canadian Timber Control is in constant touch with its opposite numbers in Washington. Through personal contacts with the heads of the senior officials of the lumber and lumber products divisions of WPB and with the pulp and paper division of WPB we have, I believe, co-ordinated our efforts in an attempt to see that the forest resources of North America as a whole, irrespective of the boundary lines, are directed primarily in a manner best designed to assist in the war effort of the United Nations."



JOHN H. MOAK, whose appointment as Master Mechanic at Soundview Pulp Company, Everett, Wash., during the absence of ARTHUR E. DUKE, who joined the U. S. Navy Seabees was announced in the August issue.
Mr. MOAK graduated from Oregon State College in engineering in 1939, after which he was an engineer at Camas, Wash., during the rebuilding of that mill. He was associated with O. C. SCHOENWERK, Chicago, Consulting Engineer, in construction work at Longview and later was employed on design and construction of the Everett, Wash., pulp mill of Weyerhaeuser Timber Co. He was Field Engineer at Soundview during construction of Unit No. 2 in 1936-7 and was again with Mr. SCHOENWERK during the following year. There followed three years at the Brunswick Pulp & Paper Company in Georgia as Shift Superintendent. He rejoined Soundview as Assistant Master Mechanic in June, 1940.

G. A. Houston Passes

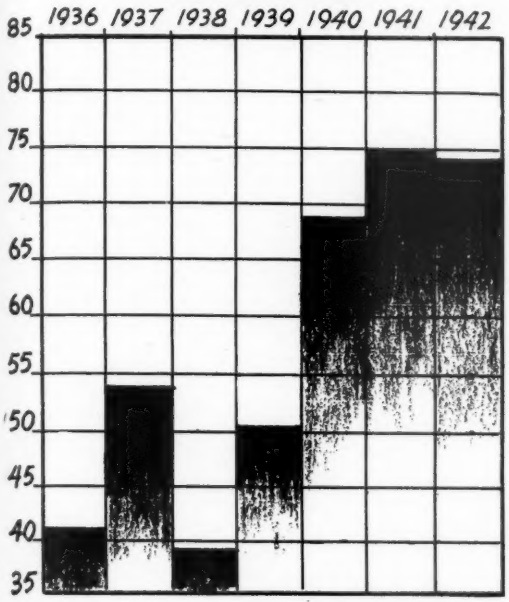
George A Houston, Weyerhaeuser Sales Company executive, died suddenly on September 30 at Vancouver, B. C., while attending a meeting of Weyerhaeuser officials. Mr. Houston was stricken with a heart attack shortly after his arrival from St. Paul where he made his headquarters as general sales manager in charge of specialty lines.

He was born at Dixon, Missouri, in 1881, and had spent most of his business life in the lumber industry where he was widely known. For several years he represented Long-Bell Lumber Company in various important metropolitan markets and then as general sales manager with headquarters at Kansas City. He joined the Weyerhaeuser organization in 1936.

He is survived by his wife, a son, a sister and two brothers, Homer and Earl. The latter is West Coast sales manager for Long-Bell Lumber Company, Longview, Wash.

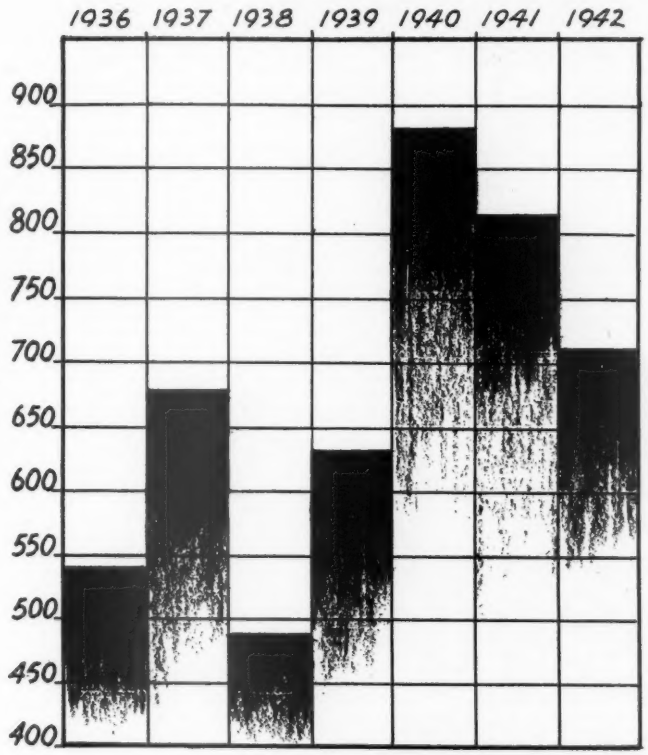
B. C. Production of Paper
Other than Newsprint

Thousands of Tons

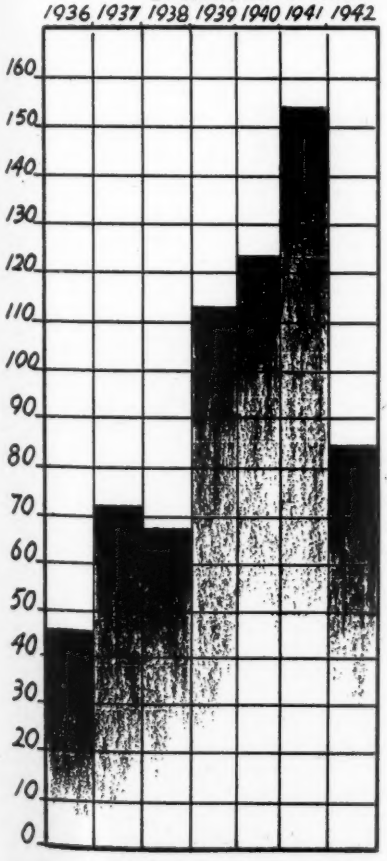


Production of Hemlock and Balsam in B. C.

Millions of Feet



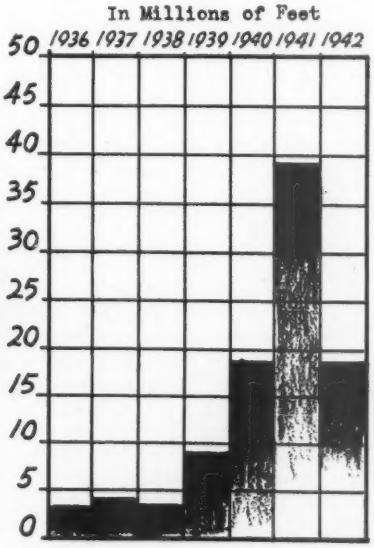
British Columbia Exports of Hemlock Logs
In Millions of Feet



About 75 percent to U. S.

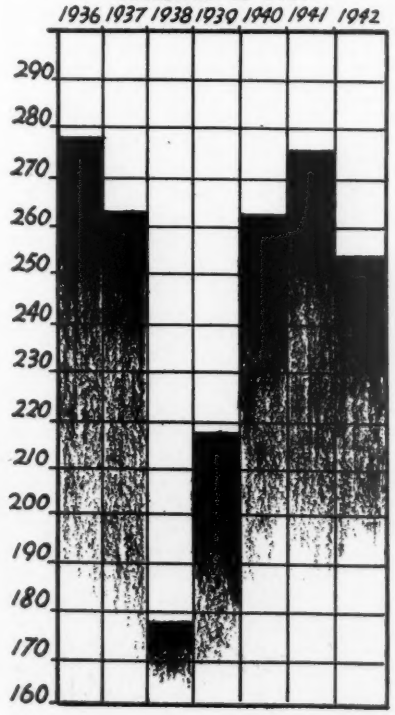
British Columbia Exports
of Balsam Logs

In Millions of Feet



About 75 percent to U. S.

British Columbia Newsprint Production
Thousands of Tons



HERE IS THE HEAD TABLE AT TAPPI MEETING in Camas, Wash., October 5 (photographed as they were seated, left to right):

Top row: ROBERT M. TRUE, General Dyestuff Corp., Portland, Ore.; Secretary-Treasurer of TAPPI's Pacific Section; CARL FAHLSTROM, Assistant Resident Manager, Longview Fibre Co., Longview, Wash.; EDWARD P. WOOD, Technical Director, Pulp Division, Weyerhaeuser Timber Co., Longview, and Executive Committeeman of Pacific Section; N. W. COSTER, Technical Director, Soundview Pulp Co., Everett, Wash.; A. G. "Buff" NATWICK, Assistant Resident Manager, Crown Zellerbach Corp., Camas, and Prof. BROR L. GRONDAL, College of Forestry, University of Washington, who discussed recovery of logging waste.

Lower row: CLARENCE A. ENGHOUSE, Assistant Resident Manager, Crown Zellerbach Corp., West Linn, Ore., and Chairman of Pacific Section of TAPPI; Dr. LEO FRIEDMAN, Assistant Professor of Chemistry, Oregon State College, who discussed recent advances in wood technology; W. F. "Doc" HOLZER, Central Technical Dept., Crown Zellerbach Corp., another Executive Committeeman who was active in handling preparations for the meeting; Dean PAUL DUNN, School of Forestry, Oregon State College; J. E. HANNY, Resident Manager, Crown Zellerbach Corp., and C. J. McAllister, Simonds-Worden-White Co., Portland.

Large Turnout for TAPPI's Dinner Meeting Held in Camas

THE Pacific Coast Section of TAPPI held one of its best-attended dinner meetings in years at Nora Self Hall, Camas, Wash., on October 5. It was announced that 123 were present, but a few of this number failed to sign the registration cards.

One reason for the big turnout, it was believed, was that this was the only fall dinner meeting scheduled this year. Instead of the usual monthly get-togethers, there will be only one other dinner meeting for the 1943-44 season and that is scheduled to be held in Everett, Wash., February 1.

The Shibley Award for the best paper during the year by men actively working in the Pacific Coast industry is open for competition again and it is expected the award will be made at the annual joint meeting of the Pacific Division of the American Pulp & Paper Mill Superintendents Association and the Pacific Division of TAPPI (next May or June. That meeting probably will be held in Portland, Ore.

There were no Shibley contest papers presented at Camas, the two principal speakers at this meeting being Prof. Bror L. Grondal, College of Forestry, University of Washington, who discussed the practicability of using forest waste for pulp and paper products, and Assistant Prof. Leo Friedman, Chemistry Department, Oregon State College, who told of recent advances in wood technology.

Their talks supplemented each other, dealing with two fields of research in the highly important subject of making more complete use of our Pacific Coast forest resources —a subject which is uppermost in the minds of all progressive woods industries of the west owing to the growing scarcity of available timber and increasing production costs.

Prof. Grondal brought up to date the studies made at the University of Washington of the possibilities of using a portable reduction plant in logged off lands to select and prepare waste wood for use in pulp and paper mills. His advocacy of such a reduction plant had been well known and was the subject of previous discourses, and at Camas he mentioned improvements and modifications of the plan which have seemed advisable.

Dr. Friedman described experiments being made at Oregon State College in producing a sawdust plaster, cork from Douglas fir bark, and molded plastics from wood.

The two talks by these authorities are published on the following pages.

Enghouse Thanks Women

● Clarence E. Enghouse, assistant resident manager of the Crown Zellerbach mill at West Linn, Ore., presided at the Camas meeting and prior to the talks introduced the guests at the head table whose pictures appear at the top of this page. Among those introduced was Dean Paul Dunn, of the Forestry School, Oregon State College, who was attending his first TAPPI meeting. He expressed a keen interest in the activities of TAPPI and a desire to continue to participate in them.

One of those asked by Mr. Enghouse to rise and take a bow for the considerable work he had done in making preparations for the meeting was R. G. Jaffe, of the central technical department, Crown Zellerbach Corp., Camas. Also active in making arrangements was W. F. "Doc" Holzer, of the central technical department at Camas, and Bob True, of Portland, both of whom sat at the head table.

The vice chairman, Erik Ekholm, general superintendent, Puget Sound Pulp & Timber Company, Bellingham, Wash., who arranged the program, was unable to attend but was

represented by Eric Ericsson, technical director at the Bellingham mill.

Mr. Enghouse expressed the gratitude of the Pacific Section of TAPPI to the womenfolk of Camas who came to the aid of the organization by preparing and serving the entire meal. These were the women of the high school parent-teachers association, many of whom are wives and mothers of men employed in the Camas mill. They cooked and served an excellent baked salmon dinner.

To each guest was given a complimentary package of paper napkins from the Crown Willamette Paper Company, division of Crown Zellerbach Corp., Camas, with this poetical dedication, reportedly composed by Asssitant Resident Manager A. G. Natwick:

"In our gigantic war program,
we can't all be a captain,
"But come what may, we can
read 'My Day' and always have
a napkin!"

The meeting closed with a moving picture entitled "Wheels Across India."

AT TAPPI meeting at Camas October 5:

(Left to right) R. Q. JAFFE, Central Technical Dept., Crown Zellerbach Corp., Camas, who handled reservations; TED ROWELL, Foreman of barker-chipper plant, and G. F. ALCORN, Plant Engineer, both from Weyerhaeuser mill, Everett.

J. B. SYMONDS, Sinclair Co. of Seattle, with CARL SHOLDEBRAND, Sulphite Superintendent, Hawley Pulp & Paper Co., Oregon City, who is on the right.

(Left to right) G. W. CHARTERS, Asst. Resident Manager, Crown Zellerbach Corp., Camas; HERMAN SIMPSON, Western Gear Works, Seattle, and H. E. BURDON, Office Manager, Crown Zellerbach Corp., Camas.

ATTENDANCE

• More than 120 attended the Camas meeting, but a few failed to turn in signed cards. Following are the 119 who registered as present:

F. R. Armbruster, Great Western Division, The Dow Chemical Co., Seattle; **Gerald Alcorn,** Pulp Division Weyerhaeuser Timber Co., Everett, Wash.; **Robert Aiken,** Crown Zellerbach Corp., Portland, Ore.; **C. A. Anderson,** Crown Zellerbach Corp., Camas, Wash.; **Arthur B. Anderson,** Western Pine Association, Portland; **B. R. Adams,** Hawley Pulp & Paper Co., Oregon City, Ore.; **Geo. D. Bailey,** Crown Zellerbach Corp., Camas; **H. H. Burdon,** Crown Zellerbach Corp., Camas; **E. R. Barrett,** A. O. Smith Corp., Seattle; **Martin Breuer,** E. I. du Pont de Nemours & Co., San Francisco; **W. G. Beckum,** Lumber Division Weyerhaeuser Timber Co., Longview; **P. W. Brackett,** Longview Fibre Co., Longview; **C. J. Beaver,** Crown Zellerbach Corp., Camas; **William W. Clarke,** Longview Fibre Co., Longview; **G. W. Charters,** Crown Zellerbach Corp., Camas; **J. V. B. Cox,** Hercules Powder Co., Portland; **N. W. Coster,** Soundview Pulp Co., Everett; **R. E. Chase,** R. E. Chase & Co., Tacoma; **G. T. Cromier,** Cellulose Products Co., Tacoma; **John Coppabe,** The Flox Co., Klamath Falls, Ore.; **Claude Callaghan,** The Flox Co., Tacoma; **R. D. Day,** Crown Zellerbach Corp., Camas; **T. E. Dear,** Crown Zellerbach Corp., Camas; **Dean Paul M. Dunn,** Oregon State College, Corvallis, Ore.; **John DuPuis,** Columbia River Paper Mills, Vancouver, Wash.

H. A. Des Marais, General Dyestuff Corp., San Francisco; **Joel L. Edwards,** Crown Zellerbach Corp., Camas; **C. A. Enghouse,** Crown Zellerbach Corp., West Linn, Ore.; **E. O. Ericcson,** Puget Sound Pulp & Timber Co., Bellingham, Wash.; **G. C. Eck,** Central Technical Dept., Crown Zellerbach Corp., Camas; **Edward E. Escher,** Longview Fibre Co., Longview; **Donald G. Felthous,** Pulp Division Weyerhaeuser Timber Co., Longview; **Chester Fee,** Pacific Pulp & Paper Industry, Portland; **Carl Fahlstrom,** Longview Fibre Co., Longview; **Dr. Leo Friedman,** Oregon State College, Corvallis; **Harry W. Glenn,** Crown Zellerbach Corp., Camas; **William R. Gibson,** Northwest Filter Co., Seattle; **V. C. Gault,** Crown Zellerbach Corp., Camas; **G. H. Gallaway,** Crown Zellerbach Corp., Camas.

Prof. Bror L. Grondal, College of Forestry, University of Washington, Seattle; **T. H. Grant,** Columbia River Paper Mills, Vancouver, Wash.; **Russell Graff,** Longview Fibre Co., Longview; **S. E. Hazelquist,** Pulp Division Weyerhaeuser Timber Co., Longview; **Joyce C. Haun,** Electric Steel Foundry, Portland; **R. N. Hammond,** Pulp Division Weyerhaeuser Timber Co., Longview; **Otto L. Hudrlik,** The Flox Co., Portland; **J. E. Hanny,** Crown Zellerbach Corp., Camas; **W. F. Holzer,** Central Technical Dept., Crown Zellerbach Corp., Camas.

J. A. Harris, Crown Zellerbach Corp., West Linn; **J. A. Hyde,** Central Technical Dept., Crown Zellerbach Corp., Camas; **H. A. Hauff,** Pulp Division, Weyerhaeuser Timber Co., Longview; **James H. Hull,** Central Technical Dept., Crown Zellerbach Corp., Camas; **Jan Haugerod,** Crown Zellerbach Corp., West Linn; **W. C. Jacoby,** Crown Zellerbach Corp., Camas; **R. Q. Jaffe,** Central Technical Dept., Crown Zellerbach Corp., Camas; **Joe G. Jenkins,** Hawley Pulp & Paper Co., Oregon City; **Don Knapp,** Crown Zellerbach Corp., Camas.

Bill Kasch, Pulp Division, Weyerhaeuser Timber Co., Everett; **H. D. King,** Central Technical Dept., Crown Zellerbach Corp., Camas; **John W. Klein,** Longview Fibre Co., Longview; **Lawrence Koplin,** Crown Zellerbach Corp., Camas; **J. R. Kieburtz,** Rayonier Incorporated, Shelton, Wash.; **R. B. Kirkwood,** Crown Zellerbach Corp., Camas; **Carl Loron,** Crown Zellerbach Corp., Camas; **W. E. Lambert,** Crown Zellerbach Corp., Camas; **E. W. Lozier,** Western Pine Association, Portland; **D. Lester Lynch,** Simpson Logging Co., Shelton; **Harold D. Lange,** Cellulose Products, Co., Tacoma; **Gustaf A. Lorenz,** Crown Zellerbach Corp., Camas; **F. Daniel McGillicuddy, Jr.,** Rayonier Incorporated, Hoquiam.

Vern L. Mauerman, Pulp Division, Weyerhaeuser Timber Co., Longview; **C. J. McAllister,** Simonds Worden White Co., Portland; **Raymond Munllay,** Columbia River Paper Mills, Vancouver, Wash.; **Otto Michaelis,** Crown Zellerbach Corp., Camas; **M. H. Norton,** Longview Fibre Co., Longview; **E. H. Nunn,** Crown Zellerbach, Corp., West Linn; **A. G. Natwick,** Crown Zellerbach Corp., Camas; **A. Newcomb,** Crown Zellerabch Corp., Camas; **William Pittam,** Pulp Division, Weyerhaeuser Timber Co., Longview; **R. T. Petrie,** Black-Clawson Co., Portland; **J. C. Plankinton,** Central Technical Dept., Crown Zellerbach Corp., Camas.

H. H. Richmond, Electric Steel Foundry, Portland; **E. D. Rich,** Cellulose Products Co., Tacoma; **Arthur K. Roberts,** Western Pine Association, Portland; **E. J. Roake,** Crown Zellerbach Corp., West Linn; **D. Rowell,** Pulp Divison, Weyerhaeuser Timber Co., Everett; **A. W. Stout,** Western Pine Association, Portland; **D. L. Shinn,** Central Technical Dept., Crown Zellerbach Corp., Camas; **Jack V. Savage,** Crown Zellerbach Corp., Camas; **H. N. Simpson,** Seattle; **L. K. Smith,** Pacific Pulp & Paper Industry, Seattle; **Walter A. Salmonson,** Simonds Worden White Co., Seattle.

Carl Sholdebrand, Hawley Pulp & Paper Co., Oregon City; **James B. Sy-**

EDGE N. WENNBERG, who became Superintendent of the Columbia River Paper Mills, Vancouver, Wash., on September 1, is at the extreme left of this row. He is shown with some of his new associates at the Vancouver mill (photographs were taken at the TAPPI dinner meeting at Camas, Wash., October 5).

The other Vancouver mill men (beginning on Mr. WENNBERG's right) are: THOMAS GRANT, Sulphite Superintendent; JOHN DUPUIS, Pulp Tester and cousin of the Port Angeles Dupuis family; JEAN YOUNG, Chief Electrician, and RAYMOND A. MURRAY, Day Foreman.

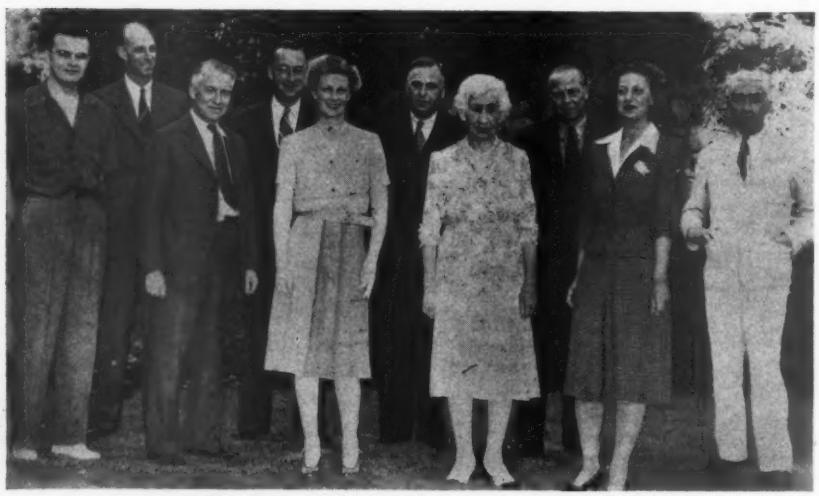
monds, The Sinclair Co., Seattle; **F. Stevey,** Crown Zellerbach Corp., Camas; **Leon E. Semke,** Crown Zellerbach Corp., Camas; **Fred R. Sievers,** Crown Zellerbach Corp., Camas;**A. P. Siebers,** Longview Fibre Co., Longview; **W. J. Shelton,** Longview Fibre Co., Longview; **R. M. True,** General Dyestuff Corp., Portland; **Preston Varney,** Pulp Division Weyerhaeuser Timber Co., Longview; **Eugene V. Young,** Columbia River Paper Mills, Vancouver, Wash.; **Edward Webberley,** Crown Zellerbach Corp., Camas.

Harold G. Wall, Longview Fibre Co., Longview; **Jack Wilcox,** Electric Steel Foundry Co., Portland; **Peter M. Wilkie,** Crown Zellerbach Corp., Camas; **J. W. Wenger,** Central Technical Dept., Crown Zellerbach Corp., Camas; **Albert Wilson,** Pacific Pulp & Paper Industry, Seattle; **Ruth M. Watts,** Pulp Division, Weyerhaeuser Timber Co., Longview; **Edward P. Wood,** Pulp Division Weyerhaeuser Timber Co., Longview; **E. N. Wennberg,** Columbia River Paper Mills, Vancouver; **W. E. Wegner,** Central Technical Dept., Crown Zellerbach Corp., Camas; **L. A. Wendt,** Pulp Division, Weyerhaeuser Timber Co., Everett; **Zina A. Wize,** Griffith Rubber Mills, Portland; **D. D. Wilma,** Longview Fibre Co., Longview; **Herb Wymore,** Crown Zellerbach Corp., Camas, **Fred Weleber,** Hawley Pulp & Paper Co., Oregon City.

Lent Joins Navy

● Harold Lent, who was in charge of the sales promotion department at the Hawley Pulp & Paper Company, Oregon City, joined the U. S. Navy as a specialist in September and reported to Camp Farragut, Idaho, for his training course. His wife is remaining in Oregon City.

Mr. Lent was also the official photographer of the Hawley mill, having taken many interesting and unusual photographs depicting the history of the mill. He has been an employe there since 1929.



AMONG THE GUESTS OF POWELL RIVER COMPANY at its big British Columbia pulp and paper mill recently were WENDELL H. COWLES, partner of Bulkley, Dunton Pulp Co., Inc., of New York, and MRS. COWLES. They are shown here with a group of Powell River officials, MRS. J. S. FOLEY of Jacksonville, Fla., mother of HAROLD FOLEY, president of Powell River Co., and MRS. HAROLD FOLEY. Left to right: H. H. GRANT, secretary to MR. FOLEY; I. H. ANDREWS, control superintendent; D. A. EVANS, resident manager; RUSSELL M. COOPER, general superintendent; MRS. H. S. FOLEY; F. R. WARD, of Newsprint Service Corporation, Los Angeles; MRS. J. S. FOLEY, MR. COWLES, MRS. COWLES and HAROLD FOLEY.

New Superintendent Takes Over At Vancouver

● Edge N. Wennberg, who was paper mill superintendent at the Cascade mill of the Brown Paper Company, Berlin, N. H., took over the duties of superintendent of the Columbia River Paper Mills, Vancouver, Wash., September 1.

Mr. Wennberg was born in Oslo, Norway, in 1905, and came to the United States in 1927 after working as a mechanical engineer on paper making machinery in Norway. He was graduated from the New York State College of Forestry, Syracuse, N. Y., in 1929, with a bachelor of science degree in pulp and paper making.

Before joining the Brown Company, he was with the International Paper Company, Gelns Falls, N. Y.; the Continental Diamond Fibre Company, Bridgeport, Pa., where he was technical director, and Moore and Thompson Paper Company, Bellows Falls, Vt., where he was paper mill superintendent. At the Cascade mill he had charge of the production of toweling and kraft specialties.

Mr. Wennberg, his wife and three young children, two boys and a girl, have taken a home in the outskirts of Camas, east of Vancouver.

Douglas Armstrong, who was acting superintendent at the Vancouver mill, has returned to his position as assistant superintendent at the Oregon Pulp & Paper Company at Salem, Ore.

Manpower Competition At Coos Bay

● The Empire, Ore., mill of the Coos Bay Pulp Corporation finds itself in a critical position as far as manpower is concerned. The competition of construction work on government projects, developments of chrome in that area, increased work in woods and sawmills, mining operations, and other factors are contributing to a high turnover in the common labor and near base rate jobs.

As there are few jobs that lend themselves to the use of women in this plant, they have but seven women in a total crew of 115 persons. They are planning to use more women as time goes on. One job which has formerly been considered a job for men only, is the pulp baling press and at present women seem to be handling it capably and with no ill effects.

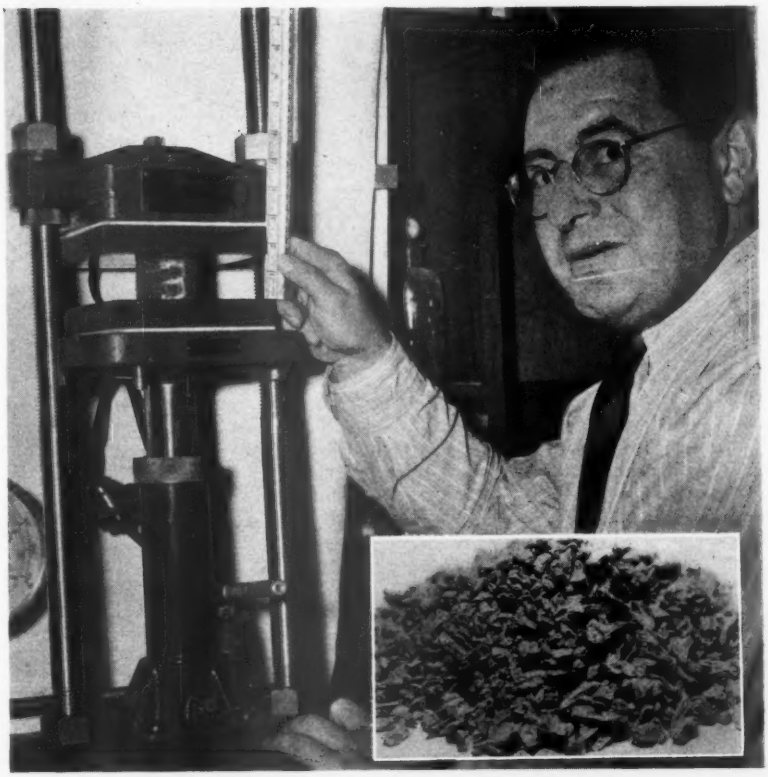
Recent Advances in Wood Technology

By LEO FRIEDMAN*

Charcoal, sawdust plaster, Douglas fir cork and wood plastics are among the products of the Oregon Forest Products Laboratory which are discussed in this article ' ' ' Brings up to date the developments in that institution which was established about two years ago for the purpose of studying ways and means of utilizing woods industry waste materials.

THE Oregon Forest Products Laboratory was established on the Oregon State College campus on July 1, 1941. Earlier that year the state legislature had, through special appropriation, provided funds for research in the fields of utilization, fabrication, and manufacture of forest products by the state board of forestry, cooperating jointly with the staff of the school of forestry. It was the purpose of the legislative bill that said research be directed toward improving and bettering the utilization of present waste material resulting from the harvesting of forest crops and the manufacture of lumber and other wood products.

As set up on the Oregon State College campus this laboratory operates under the direction of the dean of the school of forestry, Paul M. Dunn, and utilizes the facilities and personnel of the schools of engineering, science, and others to supplement those of the school of forestry. This cooperative arrangement has proved extremely satisfactory to date and has permitted progress that would not otherwise have been possible in these trying times with the war shortages of equipment and manpower.



ASSISTANT PROFESSOR LEO FRIEDMAN, Oregon State College, author of the paper published on this page, is shown here testing the compressibility of fir cork made at the Oregon Forest Products Laboratory, Corvallis, Ore. The inset shows some of the cork, which, it is believed, will be more suitable for insulation than for gaskets or similar products requiring high resiliency.

Waste Inventory

● One of the first studies made after the establishment of the laboratory was "An Inventory of Sawmill Waste in Oregon," by Glenn Voorhies, Assistant Professor of Wood Products. Although the approximate amount of waste that develops from the conversion of sawlogs into lumber was known, it was considered desirable to investigate the quality, form, and relative volumes of the different waste items in order intelligently to approach the laboratory phases of finding possible uses. The study was also aimed at the location of present and possible future locations of sawmill wastes.

The study was made at eleven pine and twenty-nine fir mills of varying size classes in western, southern, and eastern Oregon. The total volume of waste was found to be 80.76 cubic feet of pine and 89.90 cubic feet of fir for each thousand feet of logs manufactured. Sawdust and shavings make up the largest item of material of similar characteristics, (pine, 38.8%; fir, 42.2%), followed in order by bark (pine, 28.3%; fir, 23.2%), small and common slab and edgings (18.9 and 16.6%), mill trims and planer ends (9.1 and 10.4%), and large clear slab and edgings (4.3 and 7.6%).

Approximately 30% of the waste is recovered and used either for mill fuel, home fuel, or other by-products. An analysis of the results led to the conclusion that research studies may develop uses for each class of material. Suggested examples were cork from bark, plastic bonded materials from sawdust and shavings, charcoal and improved fuel firing from common slab and edgings, cut stocks from clear mill waste, and improved values from low grade lumber.

Transportation

● In view of the importance of transportation to utilization of sawmill waste, a study of truck, rail, and barging methods and the costs involved was made by Mr. G. Eugene Tower of the laboratory staff. The following table made up from his data shows the relative transportation cost for hauls of 10, 30, and 50 miles. These do not include loading, unloading, or fuel costs at mill.

*Department of Chemistry, Oregon State College. Contribution from the Oregon Forest Products Laboratory, Corvallis, Ore. Paper given at Pacific Section, Technical Association of the Pulp & Paper Industry, Camas, Wash., October 5, 1943.

TABLE I

Trucks	Distance of Haul 10 mi.	30 mi.	50 mi.
1 unit body	$2.16	.....	.....
2½ unit body	.86	2.59	4.32
4 unit semi-trailer	.71	2.14	3.56
9 unit semi-trailer	.40	1.21	2.01
Rail	1.06	1.28	1.67
Barge	.53	.63	.73

It is evident from the above figures that transportation for distances of 40 miles or over must be by rail or barge, and that barge transportation where possible is the cheapest.

Charcoal

● Under the supervision of Dr. E. G. Locke of the department of chemical engineering, a pilot plant has been set up for the production of charcoal from hogged fuel and sawdust in a continuous rotary kiln. This study aims at the production of a charcoal briquet which would be suitable for a metallurgical char. Plans include the recovery of wood tar and light oil. A number of short runs have been made with the charcoal retort, and most of the equipment needed for the study of briquetting has been obtained.

Sawdust Plaster

● One of the first problems to engage the attention of the laboratory staff was a study of the manufacture of a "sawdust plaster." In addition to utilizing a sawmill waste, it was hoped that through use of a synthetic resin as binder and a volatile non-aqueous solvent, it would be possible to prepare a material that could be used as an interior plaster without the introduction of water to the home under construction. Many combinations of resin, plasticizer, and solvent have been tried, and we have finally found what appears to be a satisfactory mix using wood flour, ethyl cellulose, and volatile solvents.

This material can be troweled onto a solid wooden wall surface (plywood, shiplap, etc.), adheres well, and yields a wall of decidedly satisfactory appearance. The plaster is not brittle, does not crack, and can be readily tinted or painted. The finished wall is stronger and in general a better wall than the old type lath and plaster construction. Costs are comparable to those of the standard plaster job. Present plans include a study of the possibility of applying this type of plaster with a spray gun which would speed up the application and bring the cost down.

LIEUTENANT DAN PHILLIPS, who was Assistant to the Superintendent of the Container Division of The Flintkote Company, Pioneer Division, Los Angeles, completed an officers' training course at Fort Knox, Ky.; then went into the tank corps. At last account he was in command of five medium tanks, assigned to the 13th Armored Division, Camp Beal, Marysville, Calif.

Douglas Fir Cork

● Before our troops invaded North Africa, the critical shortage of cork focussed attention on Douglas fir bark as a source of cork. Considerable progress has been made in our laboratory, in Dr. Bror L. Grondal's laboratory at the University of Washington, and in other laboratories on the separation of cork from this bark and on treatments to improve its cork like qualities.

We have utilized a solvent drying operation which permits rapid drying without deterioration of the cork and which removes resins that are undesirable in the finished product. Resiliency tests on composition Douglas fir cork prepared in our laboratory have shown the material to be surprisingly good (80% recovery in 1 minute after 50% compression) but definitely inferior to Spanish cork (over 90% recovery under similar conditions).

Studies on this material now under way include (1) a complete chemical analysis, which it is hoped will assist in orienting future work, and (2) the preparation and testing of insulating blocks. It appears that the best possible outlet for Douglas fir cork should be as an insulating material.

The finely divided bark material obtained as a refuse during the separation of the cork offers promise as a raw material for plastics, as a source of tannin, and possibly of other extractives. Chemical analysis of this material is also under way and should go far in orienting future work.

Wood Plastics

● The possibility of reducing wood wastes to flour and then bonding this into molded products has occupied a good deal of our time at Oregon State College. Two lines of attack have been followed, namely, the bonding of the wood particles by added resins and bonding through utilization of the plastic qualities of the lignin in the wood.

Experiments to date show definite promise that molded products of a satisfactory character and low cost can be prepared from comminuted wood wastes. Our studies on bonding by lignin have included attempts to modify the lignin through addition of aniline, furfural, urea, and other materials and studies of the bonding qualities of definite chemical derivatives of lignin. In general, the molded products have been black, lustrous, and of good strength. Improvement in water resistance is the most pressing problem, but not at all an insurmountable problem.

QUESTIONS

● Professor Friedman showed many samples of the sawdust plaster, cork and wood plastics produced at Corvallis and answered questions.

Regarding the plaster, he said it might be used as insulation itself or applied over insulation board, say 1/32 of an inch thick, on home interiors. Samples were shown with nails driven in them, dented by hammers, etc., but none of them apparently showing any crumbling or general break-up.

It was said materials would cost about 10 cents a square yard and spray-gun application probably another 10 cents a square yard.

Samples of the wood plastics passed around included some made of rotten wood. It was stated that these plastics could be machined or sawn. Materials were estimated to cost 3 to 5 cents per square foot, one quarter of an inch thick.

In reply to a query, it was said the specific gravity of the plastic was 1.3.

Difficulty in obtaining chemicals for use in making the plastics during war time was conceded. Attempts to use waste sulphite liquor as a binding material for some of the products of the laboratory had not been very successful to date.

Why Is Waste Wood Wasted?

By BROR L. GRONDAL*

A discussion of the practicability of using forest waste for pulp and paper products ✓ ✓ ✓ Some new ideas and modifications of the proposal to operate a portable reduction plant in the woods which would prepare pulpwood for use.

THE preliminary phase of an investigation, conducted with funds allocated to the college of forestry by the Washington State Planning Council with the approval of Governor Arthur B. Langlie, to find profitable markets for hitherto unutilized material that is left as slash after timbered areas have been logged, has been completed.

This investigation involved more than a mere survey of typical logged-off areas. It included a study of the kind and characteristics of the slash that accumulated when areas were logged by different yarding methods. The quantity of the unutilized material, tabulated according to dimensions, size, defects such as an excessive number of knots, decay and other pertinent facts, was of course determined. Detailed maps were drawn to scale, showing the exact location on the area studied of every piece of material that might have possible use-value. Approximately a car-load of this material was delivered to the University of Washington for further study. With these data and this material at hand, studies designed to find uses for logging slash have been conducted during the past two years, although depletion of the research staff, due to necessary and more urgent war service, has delayed the completion of the investigation. Definite progress has nevertheless been made, and this forms the subject of this report to you.

Unutilized material that is left as logging slash is wasted — it will eventually burn or rot. Burned, it contributes nothing to the forest soil, for as it burns, the destruction of humus and other organic matter in the soil, due to the high temperatures that are developed in a "good" burn, causes a loss of plant food material that is in no wise balanced by the value of the ash as fertilizer. But logging slash must nevertheless be burned, under ordinary operating conditions. Otherwise destruction fires are almost certain to destroy the seedlings and young second growth before the ground cover has become dense enough to more or less "fire-proof" the logged over area.

In normal stands of timber in this region, particularly where the percentage of pulpwood species is high, a tremendous volume of wood remains as slash—sometimes as much as 40,000 board feet per acre. Much of this is good pulp wood, to say nothing of wood that is potentially useful for other purposes.

Why is this "waste" wasted?

Why must good lumber logs—even peeler logs—sometimes remain as part of the slash after the loggers have moved on? Is this deliberate waste? Or is it invariably accidental?

A few months after an area has been logged, the slash doesn't look just like it did at the time the last log hit the landing. Foliage that obscured material left in the ground has wilted, and needles on the twigs have shrivelled or dropped off. A new picture of the logged over area presents itself.

Logs Become Visible

Logs that were left for no apparent reason become plainly visible. Good lumber logs, bucked to length, occasionally may be found. Such logs were not left deliberately. The choker setter just didn't find them among the debris. Many small logs are left, for no apparent reason, even though they may contain good material. In about every instance, investigation develops the fact that as the logging crew operates on a "busheling" basis (that is, pay based on the number of board feet logged), it was moved to a new setting to avoid labor disturbances, making a better clean up impossible.

In tractor logging, good logs are sometimes left because the cost of moving a lot of slash to "get at" just one log appeared to be too high, although as a rule there is a tendency to log cleaner with tractors than when skidders or other yarding methods are employed.

In view of the fact that so much good material is left on the ground as slash in ordinary logging, how can anyone suggest that it will pay to re-log slash? The ground is covered with chunks resulting from breakage. Tree tops are everywhere. Large branches litter the area. Hollow butted logs, resulting from the long-butting of butt logs, are scattered over the area. Logs containing too high a percentage of decayed wood to make them useful for lumber production are present in great quantities. Lots of small trees, knocked over during the yarding, form a crazy pattern over the area.

Now, if it wasn't profitable in the first place to yard this stuff, how can it be anything but waste? How can anyone even suggest that it will be possible to re-log logging slash?

This waste is **waste** simply because in the primary logging, heavy, expensive equipment and high-priced crews are used. Time lost in handling low-value material under such circumstances would boost logging costs skyward. Large logs must be handled with heavy machinery.

There isn't such a large proportion of large material remaining in the slash. Therefore, re-logging in slash can be accomplished with light equipment. But the material that is yarded is of relatively low value. In most instances, it will not stand the transportation cost that would be involved in delivering it to a wood-using industry.

Must Be Concentrated

The unutilized but usable material that is left in the logging slash must be **concentrated,** so that this high cost of transportation will not introduce economic problems that will dictate non-use of good wood. The problem that we have to solve is somewhat analogous to that faced by operators of mines from which metaliferous ores are obtained. For instance—in Arizona, in the region adjacent to Kingman, are a considerable number of mines that produce tungsten ores—good rich ores —that should be immensely valuable in our war industries. These ores can be concentrated at the mines, and these concentrates can almost, but not quite, stand the cost of shipment to tungsten consuming centers in the eastern states. A centrally located reduction plant at Kingman, to produce tungsten so valuable that it could be shipped anywhere, would probably enable the United States to produce at least half of all of the tungsten we need.

*Professor of forest products, College of Forestry, University of Washington, Seattle. A paper given at meeting of Pacific Section, Technical Association of the Pulp & Paper Industry, at Camas, Wash., October 5, 1943.

But — no reduction plant exists — consequently only a limited amount of concentrates are shipped.

In logging slash, the selection of the most usable waste is the first step in concentration. Even now, this attack on the problem is under way by two major concerns.

In each case, local conditions may insure a fair degree of success—the material so concentrated is good enough, as pulp wood, to stand the very considerable shipping costs. But in most areas, reduction plants will be needed.

The big question that remains is this: How intensively must the logging slash be refined. Should the reduction plant be so fully equipped that screened chips are produced right out in the logged over areas? Or would it be better to produce pulp wood of cordwood size?

The production of cordwood by hand methods is uneconomical. Too much manpower is required. Workingmen's compensation rates, due to the accidental injuries that are much too frequent, are much too high—approaching $1.00 per cord. Moreover, the cost of hauling cordwood out of an area to the railroad grades or to truck roads is invariably high. On the other hand, the cost of yarding even small material to a centrally located spot, if the yarding distance is not too great, is relatively low.

The idea of yarding in this manner, to portable reduction plants as a solution of this problem is nothing new. Many of you may remember the plan of a portable chipping plant in railroad trucks that was designed by the late J. W. Lewis assistant general manager of Long-Bell operations some 14 years ago. Mr. Lewis' scheme was not reduced to practice, which was not surprising. The depression came with full force, and good hemlock logs, which were cheap, became available to pulp mills at prices that were, at least from the loggers' point of view, ridiculously low. Lots of hemlock logs, suitable for the manufacture of really fine lumber, rode out of the woods simply because it was cheaper to yard them and fill out loads than to leave them to rot in the woods.

Day of Cheap Logs Over

● Hemlock logs are not so cheap today. Nor will the pulp industry be blessed with cheap lumber logs in the future. But the logging slash is still cheap—it can be concentrated at a relatively low cost, and it can be reduced to a very desirable form of pulp wood at low cost in portable reduction plants.

The production of chips in the woods, according to Mr. Lewis' scheme, is probably still rather impracticable. A chipper demands a lot of energy that calls for a heavy power plant. The production of pulp wood—reasonably clean, instead of chips — requires comparatively little power, and seems to be a more practicable answer to the problem. While it is quite true that the International Wood and Sulphite Company, in the Neah Bay area in the state of Washington, found it profitable to operate a startegically located chipping plant, the experience in that operation has little bearing upon the problem at hand.

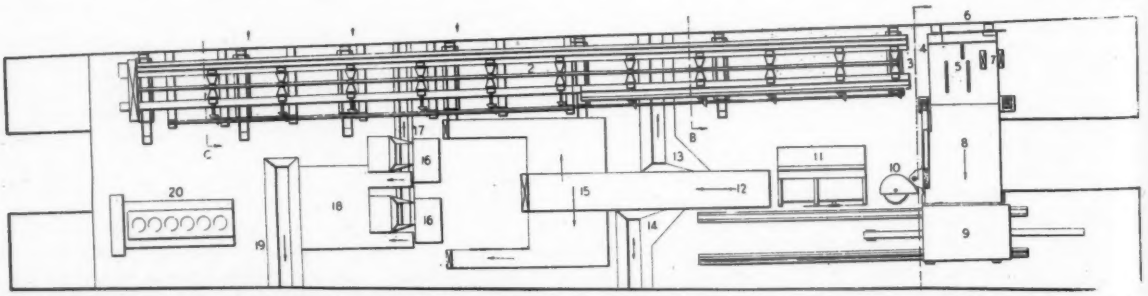
Several years ago, when the study of forest waste was initiated at the college of forestry of the University of Washington, further consideration of the practicability of constructing a wood waste reduction plant—somewhat similar to that designed by Mr. Lewis as a "forest waste reclaimer"—was suggested by Mr. E. T. Clark, secretary-manager of the Pacific Northwest Loggers' Association. Mr. Clark had, in fact, made preliminary drawings of such a unit, which differed in one very important feature from the Lewis machine. Mr. Clark envisaged a machine on a donkey sled—a machine that could either pull itself or be moved from point to point by a tractor or "cat." During all of the field studies that were conducted to determine the amount of forest waste suitable for pulp that was left in the logging slash, the possible application of the principle that Mr. Clark advocated was kept in the foreground.

Donkey sled builders are still available—the construction of donkey sleds has even been the subject of one or more magazine articles, so I can assure you that no radically new type of construction is being suggested. As Mr. Clark's scheme seemed practical, a portable pulp wood machine was evolved, on the basis of the studies that were made. (See drawing below).

May Use Chain or Rolls

● In this construction, one skid of the donkey sled is to be used as a log haul or conveyor, the logs being parbuckled up to this conveyor with the aid of a power-driven winch. This conveyor may be of the type shown in the diagram, or may be of the bull-chain type. At the end of the conveyor the logs are cut to standard lengths—appropriate stops being provided—using either a chain saw for the larger logs, or a circular swing cut-off saw for the smaller logs. All logs are to be cut into 3 or 4-foot lengths. You will note that no conventional type of splitter appears in the diagram. Instead, the short logs are rolled or conveyed in cross chains to a short-log carriage, which is provided with end-dogs, so that the log sections can be quickly dogged on the carriage. These dogs are so arranged that they can also be used as turners.

Perhaps the most unique feature



WASHINGTON STATE PLANNING COUNCIL'S PROPOSED FOREST WASTE REDUCTION MACHINE, designed by E. T. CLARK and Prof. BROR L. GRONDAL.

Parts shown are (1) portable skids, (2) log conveyor, (3) chain saw, (4) circular cut-off, (5) cross chains, (6) waste chute, (7) log stops, (8) log deck, (9) log carriage, (10) vertical fixed edger, (11) circular head saw, (12) conveyor, (13) waste conveyor, (14) clean wood conveyor, (15) end of wood conveyor, (16) hand barkers, (17) waste conveyor, (18) barked wood slide, (19) clean wood conveyor and (20) Diesel engine drive.

of this sawmill log-splitter is the vertical edger (10). This consists of a battery of circular saws, mounted on a retractable vertical shaft, so that when in the normal position for sawing, they will score the face of the log slightly deeper than the depth of cut made by the main circular saw. As you will note, the carriage travel need only be twelve feet, and as the saws in the vertical edger are spaced 4 or 6 inches apart, a single trip of the carriage, in the case of the larger logs, will produce a number of pieces of a thickness determined by the distance the log has been advanced on the headblocks of the carriage.

As the pieces that are cut drop from the saw, they are conveyed, by gravity, either to a conveyor which dumps into a gondola car spotted alongside, or to the two hand barkers. It is perfectly true that hand-barkers have rather low capacity—2½ cords of slabs in ordinary 8-hour wood room operation being pretty average performance—but in this case a great deal of the material will not be barked. Moreover, material that is too defective, or that must be handled with too great difficulty, can simply be dumped into the waste conveyor. Not much cost has been involved in the production of this stuff—no expensive transportation costs are part and parcel of this material.

Power requirements of this type of pulp producing machine are low. Consequently, low-cost diesel engines — truck engines — can be employed. These are relatively inexpensive. It is only when the power requirements rise to levels above 125 h.p. that heavy, expensive diesel engine construction is demanded.

The transmission of power to the various units may be by chain or belts. When the donkey sled is moved to various settings, it is realized that it will be more or less racked out of line, and therefore drives must be employed that are very flexible. However, no serious engineering difficulties seem to stand in the way in the design of this unit.

QUESTION PERIOD

In an informal question and answer period that followed his talk, Dr. Grondal brought out other important points concerning his suggestions. It was said motive power would be an important feature of the reduction plant and this could be solved by having a caterpillar haul the equipment on a sled.

When a great amount of unuseable waste from the reduction plant accumulates around it, the plant simply can be moved on — away from the waste.

It was believed by Dr. Grondal that equipment ought to be able to handle waste of from six inches to 48 inches in diameter.

It was believed the capacity of such a reduction plant ought to be about 15 to 20 cords a day.

A number of firms have considered use of such a plant in the woods. But it was held as not important as to just what method was adopted as long as an economical way to use the waste wood was put into effect.

It was presumed that five or six men would constitute a sufficient crew for a reduction plant.

An advantage of this portable machinery was that the choice of species of wood could be made in the woods. It was believed white fir waste would be found among suitable pulpwood.

Suggestion Prizes

● Powell River Company, the big British Columbia pulp and paper organization, has been encouraging its employees to make suggestions for the improvement of working methods and mechanical equipment of the mill.

So far there has been an excellent response, and many valuable suggestions have been submitted. The company makes a practice of rewarding employees whose proposals are of constructive value, and recently H. G. Mitten, an operator in the steam plant, was given a check for $100 by Russell M. Cooper, general superintendent, in the name of the company.

A. C. Duncan Passes

● A. C. Duncan, manager of Hercules Powder Company's Paper Makers Chemical office in Portland, Ore., died September 26 at Portland of coronary thrombosis. He was 67.

Born in Scotland, Duncan began his apprenticeship in the paper industry at the age of 12, and later came to this country gaining wide experience in his field in Canada and the United States.

In 1914, he joined the Paper Makers Chemical Corporation, Kalamazoo, Mich., as salesman, and remained with it in that capacity when the company was bought by Hercules in 1931.

Booth Firm Acquired By Weston

● Garfield Weston, young British industrialist and member of parliament who plans to make his home on the Pacific coast after the war, has completed acquisition of control over J. R. Booth, Ltd., Ontario pulp and paper manufacturer with a capacity of 15,000 tons annually. He is not taking over the company's lumber division. The Booth organization was founded by the late John R. Booth, contemporary of the late Captain Robert Dollar in the Ontario woods, who became one of Canada's richest and most picturesque industrial leaders.

Mr. Weston recently purchased the home of A. J. T. Taylor at Kew Beach, near Vancouver, B. C.

MANY OF THE MILL MEN IN THE LONGVIEW, WASH., AREA are members of the Washington State Guard Volunteers, whose duty is to protect civilian lives and federal and state property. They are taught to handle 45 calibre sub-machine guns, shown in the above picture, and are given training in Commando tactics and in combating aerial attack.

Above are about half of the Longview Fibre Company men who are enrolled in the S. G. V.

Top row (left to right): Cpl. EZRA BACHMANN, chief of the statistical office in the mill; CHARLES WHITE, of the finishing room; HUGH LEEDLE, pipefitter in the mill; WALTER BURHART, finishing room employe.
Kneeling (left to right): BENTON BERKLEY, mill machinist; Cpl. VERNON EBY, of the bag factory; a guardsman who is not a mill employe; Sgt. NICK VANDENBROCK, pipefitter's helper; Cpl. CLARENCE E. MORRISON, pipefitter.

Awarding of War Bond Prizes Features Ninth Annual Hi-Jinks

HIGHLIGHTED by the awarding of 55 War Bonds, by a sports program, a fried chicken dinner and an elaborate evening of entertainment, the ninth annual Hi-Jinks of the Paper Mill Men's Club of Southern California, held at the Riviera Country Club, Los Angeles, September 24, was pronounced by some 375 people who attended to have been an unqualified success.

While there had been some hesitancy on the part of members to stage the colorful affair in these serious times, such doubts disappeared when it became known that the Third War Loan drive was benefitted to the extent of $1,850. During the evening 50 bonds of $25 value; two of $50; two of $100, and a grand award of a $500 bond were given away.

Praise was heaped upon those PMMC officials and chairmen who did such an oustanding job. Naturally, top honors went to Jasper Dwight Tudor, Fibreboard Products Inc., the club's president; to Ancel A. Ernst, Everett Pulp & Paper Co., vice president; to Gerry A. Theim, Milwaukee Lace Paper Co., secretary; and to Walter Genuit, Fernstrom Paper Mills, Inc., Pomona, treasurer.

But these men gave credit to committee chairmen, particularly to Newby A. Green, Crown Willamette Paper Co., general chairman, and his assistant, Harry L. Fields, National Paper Products Sales Co.; the finance committe, led by Chairman Al C. Hentschel of Johnson, Carvell & Murphy, and the Christmas Party Funds committee, Chairman Ben Bahnsen, California Cotton Mills Co., did what Secretary Theim stated was the "best job ever."

All committees functioned efficiently. Joe Levine, Lily Tulip Cup Corp., headed the program committee; entertainment was the responsibility of F. R. Schroeder, Sealright Pacific, Ltd.; reservations and invitations were handled by Neil B. Sinclair, Nashua Gummed & Coated Paper Co., and the golf tournament was a job that went to Frank P. Philbrook, Graham Paper Co.

Sports and softball were promoted by Louis T. Mork, U. S. Envelope Co. In the softball contest, the jobbers team, led by Lynn Oviatt, beat the mill men by a score of 16-to-12. Oviatt came up from the San Diego branch of Blake, Moffitt & Towne. The mill men's manager was W. A. McBride, U. S. Envelope Co.

Door prizes were handled by Jerry Madigan, Johnson, Carvell & Murphy, and the director of activities was Edward N. Smith, Edw. N. Smith Paper Co.

Dinner Party

After a day of outdoor recreation, members and guests assembled for a chicken dinner and entertainment. President Tudor turned over the duties of master of ceremonies to Newby Green.

Awarding of the war bonds was an exciting affair, which reached its climax when an invited guest, Donald Calanhoun, won the $500 bond; the winning ticket having been sold by W. H. "Shorty" Chenoweth of Fernstrom Paper Mills, Inc.

Chairman Philbrook announced winners and awarded prizes for the golf tournament. George E. Marmion won a golf bag for a low net of 66; Don Plumb took home a sweater for his efforts as runner-up, 68.

Low gross winner was Tony Nobile, 81; his runner-up was Marshall Moss, 84. Match play vs. par found Morle Paup, 4 up. Best nine holes winner was R. E. LeGrant, 41. Blind nine holes winner was Treasurer J. W. Genuit, while President Tudor shared honors on blind bogey, 77, with George Weiman, H. Lamine and N. J. Grey.

In spite of the large amount of money distributed in War Bonds it was announced by Chairman Ben Bahnsen there were ample funds left for staging the annual Christmas Party for underprivileged children.

Members of the armed forces were announced: Andrew M. Dean, Lily Tulip Cup Corp.; J. C. Fischer, Sherman Waxed Paper Co.; Frank N. Gladden, International Paper Co.; C. O. Gunther, Crown Willamette Paper Co.; L. W. Hagstrom, Silklin Paper Corp.; M. L. Mowrer, Dixie Cup Co.; W. H. Townsend, Menasha Products Co., and L. R. Zick, of the same concern.

J. D. TUDOR, President, and A. A. ERNST, Vice President, were among leaders of Paper Mill Men's Club who staged another successful Hi-Jinks which netted $1,850 in war bonds this year.

In behalf of the invited guests, Philo Holland, manager, Zellerbach Paper Co., thanked the club. "Once a year we can all get together," he said, "and thus we get to know each other better."

Sponsors of Affair

The Adhesive Products, Inc. (**Lloyd I. Ramsey**), American Lace Paper Co. (**Lon A. Kippes**), Angelus Paper & Excelsior Products Co. (**F. C. Van Amberg**), Atlantic Gummed Paper Corp. (**Robert Marquis**), Berwin Paper Corp. (**Neil B. Sinclair**), Benjamin C. Bettner Company of California (**Charles E. Digby** and **Tom H. Morris**), Bloomer Brothers Company, Boston Drinking Cup Co. (**H. O. Bishop**), The E. O. Bulman Manufacturing Company, California Cotton Mills Co. (**B. Bahnsen**), California-Oregon Paper Mills, division of Columbia River Paper Mills (**J. K. Hays** and **J. M. McCord**), Capital Envelope Co. (**George McNamara** and **Horace E. Gibson**).

Comfort Paper Corp. (**Grayson B. Wheeler** and **Merle M. Paup**), Continental Bag Specialties Corp. (**I. A. Reiss**), Continental Can Co. (**Johnson, Carvell & Murphy**), Crown Willamette Paper Co. (**Lester E. Remmers, N. A. Green, Wm. R. McHaffie** and **H. A. Swafford**), Crunden Martin Manufacturing Co. (**George A. Ward**), Cupples Co. (**Charles Spies** and **Emile J. La Vigne**), John H. Davis Co. (**G. C. Pierson**), Dixie Cup Co. (**Verner Moore**) and **George F. Skleba**), The Dobeckmun Co. (**T. E. Bruffy** and **F. L. McDonough**), Everett Pulp & Paper Co. (**A. A. Ernst**).

Fernstrom Paper Mills, Inc. (**F. O. Fernstrom, J. E. Maurer, J. W. Genuit, W. H. Chenoweth, E. G. Swanberg** and **Marshall A. Moss**), Fibreboard Products, Inc. (**O. C. Majors, J. A. McDaniel** and **J. Dwight Tudor**), The Flintkote Company, Pioneer and Hollywood Divisions (**Arthur E. Carlson, Lorin B. Miller** and **Martin C. Larsen**), Samuel F. Goldman, Graham Paper Co. (**Frank R. Philbrook** and **Williard F. J. Taylor**), Great Western Cordage, Inc. (**C. H. Allen**), Groff Paper Company.

Harvey Paper Products Co. (**H. O. Bishop**), Hawley Pulp & Paper Co. (**W. B. O'Malley**), Herz Manufacturing Co. (West Coast Coverage Co.), Inland-Empire Paper Company (**S. R. Whiting**), International Paper Company, Southern Kraft Division; Johnson, Carvell & Murphy (**E. M. Murphy, Russell F. Attridge, Al Hertschel, Jerry Madigan, Phil Ossian, Clyde Wimer** and **Garry Carlton**), Jones Brokerage Co. (**Chas. E. Jones** and **Roy Jones**), Kimberly-Clark Corp. (**G. L. DuBois**), Lily-Tulip Cup Corp., Crystal Division (**Paul R. Raab** and **Louis Levine**), Longview Fibre Co. (**A. D. West** and **B. J. Thacker**), Los Angeles Paper Bag Co. (**G. S. Brenzel**), Menasha Products Co. (**B. E. Calhoon**), Mill Agents and Distributors, Inc. (**Fred L. Barnett**), Milprint, Inc. (**Stan C. Coumbe**), Milwaukee Lace Paper Co. (**G. A. Thiem**), Minnesota Mining & Manufacturing Co. (**H. R. Long** and **H. T. Nelson**), Morgan Paper Company (**Elmer C. Thomas**), Gordon Murphy & Norman A. Buist (**Gordon Murphy**), Nashua Gummed and Coated Paper Co. (**Neil B. Sinclair**), National Paper Products Sales

Co. (**Harry L. Fields**), National Products Sales (**S. E. Goldberg**), Nekoosa-Edwards Paper Co. (**Marvin Vanderheiden**), Northern Paper Mills (**Irvin E. Damon.**

Oregon Pulp & Paper Co. (**Lewis H. White**), Oval Wood Dish Corp., Pacific Coast Paper Mills (**S. G. Wilson** and **Louis F. Wanka**), Pacific Waxed Paper Co. (**Charles L. Brouse** and **Hal D. Cassaday**), Palmer-Bingham Envelope Co. (**H. R. Palmer**), Paper Container Manufacturing Co. (**J. M. Sholl Lewis**), Paper Manufacturers Co. (**Carl W. Draper**), Paper Products and Supply Co. (**Russell J. Hosfeldt**), Paper Supply Co. (**C. C. Bolyard**), Paterson Parchment Paper Co. (**Floyd D. Smith**), Pomona Paper Products, Inc. (**Paul R. May**), Protecto Products Co., Inc. (**Louis Clark**), Rhinelander Paper Co. (**Edward N. Smith**).

Schermerhorn Brothers Co. (**R. E. Walsh, Earl J. Fillier, Leo L Corder** and **John G. Berutti**), Sealright Pacific Limited (**Frederick R. Schroeder**), Sherman Paper Products Corp. of California (**A. Carter Flinn**), Silklin Paper Corporation (**Wm M. Daly**), Sinclair-Lang Company (**Neil B. Sinclair**), Southland Paper Converting Company (**S. G. Yount** and **Paul R. Halstead**), St. Helens Pulp & Paper Co. (**Frank R. Philbrook**), Tuttle Press Company (**Edward N. Smith**), United States Envelope Co. (**Louis T. Mork, Joseph S. Fairchild, Albert F, Duval** and **William A. McBridge**), Universal Paper Products Co. (**Jim Garner**).

THE PAPER MAKERS AND ASSOCIATES OF SOUTHERN CALIFORNIA were to meet October 21 in Los Angeles. John Fiske of the Westinghouse Electric & Manufacturing Company was on the program, to discuss "Electronics as Applied to the Paper Industry."

West Coast Coverage Co. (**L. W. Lamboy**), West Coast Paperboard Mills (**Wm. H. Kewell**), Western Paper Converting Co. (**Clifford W. Hurt**), Western Waxed Paper Co. (**Walter Voltz, George C. Weiman** and **Arthur Kern**).

Invited Guests:

Ace Paper Co., Acme Paper Co., Alpha Beta Food Markets, Inc., American Paper Co., Badger Paper Co., Bakers & Confectioners Supply Co., Barnum and Flagg Co., Blake, Moffitt & Towne, Brunswig Drug Co., Buel-Town Co., California Grocery Co., California Hardware Co., California Tobacco and Supply Co., Cann & Co., Carpenter Paper Co., Cash Wholesale Tobacco Co., Central Paper Co., Certified Grocers, Channel Paper & Supply Co., Glen L. Clark Co., Colonial Wholesale Grocery Co., Corcoran Paper Co., Ray Devean Paper & Twine Co., Easterday Supply Co., Fred H. French Paper Co.

Fricke & Peters, General Paper Co., Graybill Paper Co., General Merchandising Corp., Haas Baruch & Co., E. E. Hoagland Co., Hollywood Paper Co., Imperial Wholesale Grocery Co., Ingram Paper Co., Interlink Paper Co., Interstate Wholesale Grocery Co., Jason Paper Co., D. F. Joehnck, Juillard-Cockcroft Corp., Kelly Paper Co., Klauber-Wangenheim Co., La Salle Paper Co., Lee Brothers, Alfred M. Lewis Co., Los Angeles Drug Co., Market Wholesale Grocery Co., Margolis Brothers, Ltd., Marmion & Co., Marquisee Paper Co., McKesson & Robbins Inc., Pacific Chemical Co., Pacific Wholesale Grocery Co., Pennington Wholesale Grocery Co.

Rand, Halpin & Hibler, W. B. Reynolds, Roberts Public Market, I. Rudin and Co., S. E. Rykoff & Co., Jack Sagorsky, San Diego Paper Co., San Diego Products Co., W. A. Scheniman Paper Co., Sierra Paper Co., Smart & Final Co., Southern California Disinfecting Co., Southern California Wholesale Grocery, Spartan Grocery Co., State Wholesale Grocery Co., Stationers Corp., Sunshine Specialty Products Co., Stockwell-Binney Co., Taverner & Fricke, Trade Supply Co., Union Hardware & Metal Co., United States Hardware & Paper Co., Upholstery Supply Co., John Vanderzyl, Wellman-Peck & Co., West Coast Supply Co., Western States Supply Co., Wilson Paper Co., Weil Paper Co., Zellerbach Paper Co., and Pacific Pulp and Paper Industry.

Niles Anderson, Vice President, Grant Ross, Engineer, of Canadian Company

● Niles M. Anderson, former mill manager of the St. Regis Paper Company, Kraft Pulp Division, Tacoma, Wash., has been elected vice-president of the newly formed Marathon Paper Mills of Canada, Ltd., it is announced in a telegram to this magazine from D. C. Everest, president and general manager of Marathon Paper Mills Company, Rothschild, Wis.

Mr. Everest also announced the appointment of another former Pacifc Coast mill man, Grant D. Ross, as engineer for the new Canadian subsidiary of Marathon. Marathon has heretofore operated mills only in Wisconsin and Michigan. It has large timber holdings on the Pic River in Canada.

It is understood that Mr. Anderson and Mr. Ross, who were formerly associated in mill activities at Tacoma, will be engaged in preparations for the new large bleached kraft pulp mill which, it is reported, will be built in Ontario by the Marathon company when material and equipment is available. There have been a number of kraft mill projects reported recently as under consideration on the west coast and in other areas, but it is not expected that material and equipment will be available for any of them until the war is over or until there is a marked easing off of war production.

Mr. Anderson and Mr. Ross have opened their headquarters in the Canada Permanent Building, Toronto, Ont.

Mr. Anderson left Tacoma with his wife and two daughters, last March 17, for Antonagon, Mich., where he was connected with the Ontonagon Fibre Corp., a kraft mill operated by Marathon, until his recent move to Toronto. A graduate of the University of Washington forestry college, Mr. Anderson was connected on the west coast with six different pulp and paper mills. He was the first superintendent of the Puget Sound Pulp & Timber Company of Bellingham, Wash., when that mill was first started as the San Juan Pulp Manufacturing Company. He joined the St. Regis Company in Tacoma in 1936 when the remodeling of that mill was nearing completion and became mill manager in early 1942. The mill was closed November 1, 1942, as a result of a WPB order caused by the critical shortage of logs.

JOHN KOESTER (left) SECRETARY OF THE ORR FELT & BLANKET COMPANY, Piqua, Ohio, made his first tour of Pacific Coast mills during the month of September. He was accompanied by LEONARD McMASTER (right), Pacific Coast representative of Orr and other supply firms. Mr. McMaster's office is in the penthouse of the Pacific Building, Portland, Ore. Mr. Koester has had 19 years experience in all departments of Orr Felt & Blanket Company, starting in at sorting wool after completing a technical course in a textile school. In addition to being Secretary, he is in charge of the Felt Division of the company.

Mr. Ross was graduated from the University of Washington in civil engineering, and after various assignments in Alaska and Washington state from 1923 to 1928, became field engineer in that year on construction of a paper mill unit at Grays Harbor Pulp & Paper Company. He was employed later at Ocean Falls, B. C., and Camas, Wash., and with the National Park Service, joining the St. Regis Paper Company at Tacoma in 1940 as plant engineer. When the Tacoma mill closed, he became facilities construction engineer at Seattle-Tacoma Shipbuilding Corporation, Tacoma division, until joining the Marathon company in May, 1943.

St. Regis Plant for Kansas City

The St. Regis Paper Company, operator of a kraft mill, now closed, at Tacoma, Wash., is planning construction soon of a plant at Kansas City, Mo. First reports of the project did not state what kind of plant it will be, but it is sasumed that it probably will be a bag factory similar to the St. Regis subsidiaries operated at Vancouver, B. C., Seattle, Emeryville, Calif., and Los Angeles.

Trade Talk

of Those Who Sell Paper in the Western States

Flintkote Official Recalls Movie Acting Days

Mr. Hopkins—Today

● Clyde E. Hopkins, of the sales depatment of The Flintkote Company, Pioneer Division, Los Angeles, can look back on what he terms a very checkered career. Certainly it has been punctuated by extremes in the character of service — movie acting, war and paper products.

Born in Kansas in the late 90's, his family moved to Los Angeles during his 'teen years and he began working in the old Selig Studios, later becoming an original member of the Roland Film Company, along with Hal Roach and Harold Lloyd. Still later, under the management of D. W. Griffith, he acted with the Gish and Talmadge sisters.

During World War No. 1 he saw heavy fighting with the Signal Corps at San Mihiel, the Argonne, the Ypres-Liege and other sectors. After the war he rejoined Hal Roach, and remained in the movies until 1924. When the changeover from silent to talkie films occurred, Mr. Hopkins joined Pacific Pipe and Supply Company as San Bernadino representative and later became branch manager there.

The firm went out of business during the depression year of 1933 and he joined Flintkote in the spring of 1934, progressing through various departments until 1938, when he entered the sales department.

A close-up of CLYDE HOPKINS, Sales Department, The Flintkote Company (Pioneer Division) when a screen star. Here he is seen comforting LILLIAN GISH.

Blackley Visits Coast

William J. Blackley, executive vice-president, Beveridge Paper Company, Indianapolis, was a Pacific Coast visitor recently.

Blake, Moffitt & Towne Man Is Promoted

● Stanley P. Haines has been named assistant sales manager of the wrapping paper department of Blake, Moffitt & Towne's San Francisco division.

"Stan" Haines, "a pedagogue who made good" of "ever the twine shall meet" fame, became entwined in twine some 21 years ago and is an authority on the subject. First a school teacher, then a newspaperman, he joined BM&T in 1929 in charge of twine sales for the Los Angeles division.

Proving that there were no strings on the job, he moved to San Francisco headquarters division in 1933, wrapped himself up in the wrapping paper department, and, encircled by a string of friends made in twine, Mr. Haines put together a neat package in the form of a promotion, just handed him by the company. Scores of friends are extending felicitations.

Appoints Sales Manager

Of interest to his many West Coast friends, is the recent appointment of Alfred C. Sanger as national sales manager for the Appliance Divisions of General Electric Company's appliance and merchandise department, with headquarters at Bridgeport, Connecticut.

Capt. Gilbert Recovers

Capt. John Gilbert, U.S.A., formerly in the personnel department, headquarters division, Zellerbach Paper Company, San Francisco, is back on active duty after three weeks in sick bay, recovering from injuries received in the invasion of Attu.

New Personnel Manager

Walker Shephard, for the past 10 years connected with the headquarters division, Zellerbach Paper Company, San Francisco, has been appointed personnel manager for the San Francisco and headquarters division. He takes the place of Kent Holland, who resigned after eight years with the company.

Out of Bounds

Imagine the surprise of Frank C. Stratford, San Francisco division, manager, Zellerbach Paper Company, when he came down to his office one day last month and found that some joyriders had driven their auto through the big plate glass window and had tried to park their jalopie on his desk.

Paul Paganini Called

Paul J. Paganini, formerly president of the Seaboard Paper Company, San Francisco, has been called to service in the Army. While he's wearing khaki, his father, Charles M. Paganini, will carry on at Seaboard.

Joins Army

James Hooker, manager of the wrapping paper department, Pacific Coast Paper Company, San Francisco, is now in the Army and stationed at Camp Roberts, near San Luis Obispo, Calif., receiving basic training.

W. H. West Resigns

● Concluding close to 15 years with the Crown Zellerbach Corporation, W. H. West has resigned from the advertising department of Crown Willamette Paper Company and National Paper Products Sales Company, which he has headed for the past seven years, with offices in San Francisco.

On the first of October he joins his brother, George West, at Marshfield, to serve in an executive capacity as distributors of Firestone products in Southern Oregon.

Prior to joining the C-Z advertising staff in San Francisco, Mr. West's activities included surveying in Crown logging camps, paper testing at Camas, and general sales work in Crown's San Francisco's headquarters.

Paper Products Check Disease

● "The hygienic aspect of sanitary paper items in public health is vital. If every washroom were properly equipped, and the use of this service recognized by a cleanliness-conscious public, the spread of disease and infection by contact would be positively reduced," says L. J. Arms, Sales Manager of National Paper Products Sales Company, San Francisco, one of the Crown Zellerbach Corporation subsidiaries.

L. J. ARMS, Sales Manager of National Paper Products Sales Company, is also an inventor.

Mr. Arms is a specialist in the sanitary papers branch of the industry. As a young man he sold some of the first interfolded towels manufactured. Mr. Arms has literally grown up with the industry; and since 1921 has progressively advanced in his present sales executive capacity. His inventive talents have found expression in numerous ways, including the Tuscan Tissue dispensing carton and cabinet. He also aided in development of the first practical cabinets for dispensing single-fold toilet tissue.

The most recent of his inventive accomplishments has been the development of practical and attractive wooden dispensers as substitutes for metal ones.

Mr. Arms states: "The maintenance of public health is one of the most important problems in war production. War industry management has recognized this factor in properly equipping industrial washrooms."

Everett Barker Written Up In Cleveland Organ

● Another write-up of the whole log hydraulic barking and chipping unit at the Pulp Division, Weyerhaeuser Timber Company, Everett, Wash. (first described in the 1943 May Annual Review Number of this magazine) has been published in the September issue of "The Contactor," of the Clark Controller Company, Cleveland, O.

The electric automatic program control of the barker was worked out by this company in cooperation with Reliance Electric & Engineering Company of Cleveland. "The Contactor" says motors and controls "able to stand a punishing service" were necessary in order to maintain an "entire barking operation of a single log . . . in approximately three-fourths of a minute."

Union Journal Prints Article

The article and illustrations on the whole log hydraulic barker-chipper unit built at the Everett mill of the Pulp Division, Weyerhaeuser Timber Company, which appeared in the May Annual Review Number of PACIFIC PULP & PAPER INDUSTRY has been reprinted in the Pulp, Sulphite and Paper Mill Workers' Journal, official organ of that union, published in Fort Edwards, N. Y.

Allocation Committee Met Sept. 20-25

● The woodpulp allocation industry advisory committee of the War Production Board met in Washington September 20-25. Because of the increased powers of the WPB in control of the industry and the increasingly limited amounts of pulp available for allocation—the work of this committee has become of the greatest importance.

Pacific Coast interests are ably represented on the committee. According to latest attendance reports available, the following men representing companies with western operations have participated:

Arthur W. Berggren of Seattle, Rayonier Incorporated; H. O. Nichols, Crown Zellerbach Corporation; R. K. Ferguson, St. Regis Paper Company, and D. G. Driscoll, Sorg Paper Company (which has a mill in British Columbia).

B. F. BOLLING, Traffic Manager since 1930 at The Flintkote Company, Pioneer Division, Los Angeles, was commissioned Captain in the Traffic Control Division, Transportation Corps, in the fall of 1942. He first went to Washington, D. C., for special instructions and was later stationed in Oakland, Calif.

A REPRESENTATIVE GROUP AT THE PORT ANGELES, WASH., DIVISION of Crown Zellerbach Corporation gathered for this picture some months ago when that mill was awarded its minute man flag for having over 90 per cent of its personnel regularly purchasing war bonds.

Left to right: W. C. ADAMS, pipefitter, president of local 155, International Brotherhood of Pulp, Sulphite and Paper Mill Workers; JAMES PHILLIPS, Personnel and Safety Supervisor; MRS. LORENA M. KEMP, secretary to the Manager; GEORGE JOHNS, Beater Foreman; GEORGE R. DAVISON, Wood Mill Foreman; RAYMOND A. DUPUIS, Resident Manager; W. L. KIDD, Yard Foreman; ROY JENSEN, Port Angeles banker who headed the county campaign; AUGUST HOHENSEE, Mill Paymaster; and JOE MURPHY, machine tender, President of local 269 of the International Brotherhood of Papermakers.

500 Participate In Bellingham Picnic

● Five hundred employes of the Puget Sound Pulp & Timber Company and their families celebrated Labor Day with a day of picnicking at Whatcom Falls Park in Bellingham, Wash. The management provided barbecued salmon, ice cream, pop, coffee and cream.

Handling of the picnic was done by Local 194, International Brotherhood of Pulp, Sulphite and Paper Mill Workers. Dan McMonagle, sawmill foreman, was general chairman, with Glen "Bud" McDonald, sports chairman, and Stanley Lewis, entertainment chairman.

In the sports events the sawmill tug-o'-war team outpulled the boys from the sulphite end, but when it came to baseball the pulpers turned in a neat 26-6 victory.

In the mens' race, Sid Collier, sulphite foreman, showed his heels to a field of twenty. In two women's running events, Mrs. Harry Telgenhoff, wife of Harry Telgenhoff, back tender, took first and she outkicked all others in a slipper-throwing contest. Gerald Green of the laboratory teamed up with Mrs. Dan Robbins to win the egg throwing contest.

Plays Hockey In Prison Camp

● An unusual German prison camp picture of Flying Officer Gordon Cooper, brother of Russell M. Cooper, general superintendent of Powell River Company, Powell River, B. C., has reached his family. It shows him in a group of ice hockey players, with hockey uniforms, sticks and paraphernalia, all furnished to the prisoners by the Red Cross. Gordon Cooper was shot down in a bombing raid over Germany last year.

Woman's Work Record

Marie Schokohl, chip bin operator, has worked for more than one year at Longview Fibre Company, Longview, Wash., without any lost time, which is quite a feat for this woman employe because she spent last winter piling wood in the yard for the groundwood machines. She kept at this job through the heavy snow.

Brandt is Better

Friends of Oscar Brandt, pipefitter foreman of the Puget Sound Pulp, are happy to learn that he is doing well after undergoing a serious operation in Saint Joseph's Hospital in Bellingham.

ENSIGN M. R. CASHMAN, U. S. Coast Guard, is on leave from the Crown Zellerbach newsprint mill at Port Angeles, Wash., where he was personnel and safety supervisor. He is stationed in Seattle. Ensign CASHMAN has been with Crown Zellerbach Corporation since 1929. He worked in the machine room and had been in personnel and safety work since 1937.

Used Felts, Made Into Blankets, Save Many Lives

● More than 16,000 wool blankets have been made from paper machine felts donated by the Crown Zellerbach corporation to the Maple Leaf Fund and to the Red Cross in the Pacific Area.

Another big donor is the Longview Fibre Company, of Longview, Wash., which had shipped 73,212 pounds of felt which were made into 9,571 blankets up to October 1. These were contributions to the Maple Leaf Fund from this mill over a period of two and one-half years.

The used felts are shipped to mills or cleaning establishments where they are cleaned, renapped, cut into blanket size and bound at the expense of the company before being turned over to these agencies for war relief. Crown felts come from the mills at Port Angeles, Port Townsend and Camas, Wash., West Linn, Ore., and Carthage, N. Y. Camas has furnished about half of the total.

The blankets have been used in many emergencies and in soldiers' barracks for temporary overnight housing while on leave.

The Maple Leaf Fund, of New York, distributed thousands of such blankets among war victims of England and Russia, and the Pacific Coast Area of the American Red Cross turned over many blankets to Disaster Relief Stations in California, Oregon and Washington.

The number of blankets given the American Red Cross is smaller than the Maple Leaf Fund total, due to the fact that the project with the Red Cross has been under way a shorter period of time. Both projects are being continued.

J. D. Zellerbach, president of Crown Zellerbach Corporation, has received letters of appreciation from the heads of both agencies.

F. E. Gendron, president of The Maple Leaf Fund, wrote that "many lives were saved by your generosity."

A. L. Schafer, manager, Pacific Area, American Red Cross, expressing thanks "for your generous gift," gave assurance that "blankets donated to the Red Cross were put to good use."

"The most recent use of these blankets was along the coast of Washington where a small Russian freighter ran aground," he said. "Some 56 survivors of this wreck were given shelter by an American Red Cross chapter Disaster Relief group. You may be sure that the blankets donated to the Red Cross were put to good use in this case."

St. Helens Donations

The St. Helens Pulp and Paper Company has donated paper machine felts worth an estimated $1500 to the Columbia County Red Cross, C. E. Throne, Columbia County Red Cross head, has announced. The company has supplied the felts and labor has been donated to properly cut up and sew the blankets.

Twenty-five blankets are being used at the blood donor center and there is an adequate reserve supply, stored in moth-proof paper bags supplied by the Jaite Bag Company of St. Helens.

How Pulp Machine Felts Are Used In Combatting Infantile Paralysis

● The pulp and paper industry of the Pacific Coast enlisted in the fight against last summer's Pacific Coast epidemic of infantile paralysis, as was reported in the September issue of this magazine. It is still playing an important part in protecting victims from deformities and unpleasant aftermath of the attack.

Used felts from the pulp machines have been found ideal, and the only readily available source of supply, for pure wool packs essential to treatment under the Nurse Kenny method.

Mills in the Pacific Northwest have cooperated whole-heartedly by furnishing without charge several tons of felts for this purpose.

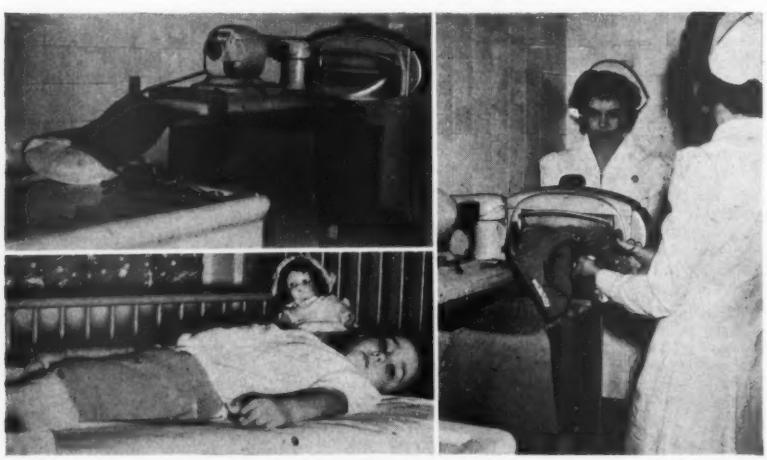
The method of treatment recently was introduced in the United States by Miss Elizabeth Kenny, a nurse from Australia, first and foremost requisite of which is the application of hot packs to relieve muscular pain and spasms. The packs replace splints, frames and plaster casts formerly used, which frequently left the limb shrunken, deformed or entirely useless.

The felt is cut to fit the arm, leg or part of the patient's body afflicted, doubled and stitched, then boiled in a steam vat, from which it is lifted with tongs, passed twice through an electric wringer to remove all water, yet remain moist, and is placed on the patient at a temperature of 170 degrees. The pack immediately is covered with oiled silk and a dry felt to retain the heat.

Applications are made at two-hour intervals for twelve hours during the day, the daily treatments continuing from two to three weeks, or as long as necessary to entirely eliminate muscle spasms.

Because of the extremely high temperature at which the pack is applied, the least presence of water would painfully burn and blister the patient. It has been found that even a slight trace of cotton in a woolen pack will retain sufficient moisture to cause serious damage, hence pure wool is a requisite, preferably slightly worn, since it is more readily wrung dry than new wool.

Last month we told of the interesting coincidence that brought this new use for felts. It was the job of Charles M. Wollenberg, business manager of the California State Department of Public Health, to get the wool. Being the brother of H. L. Wollenberg, president of the Longview Fibre Company, he knew where to go for it. Crown Zellerbach Corporation has contributed about 3,500 pounds of felts, and Longview Fibre Company, a total of 1,500 pounds, for this purpose. This was sufficient to supply all hospitals in California.



THESE PHOTOGRAPHS SHOW HOW USED FELTS FROM PULP MACHINES are prepared for use in combatting infantile paralysis.

(Upper left) Steam vat in which packs are boiled and electric wringer at Children's Hospital, Oakland.

(Right) A nurse lifts, with tongs, the felt pack from boiling vat, passing it twice through wringer to remove all water, and applies it at a temperature of 170 degrees.

(Lower left) The hot pack is applied to the patient, wrapped with oiled silk and a dry felt to retain the heat.

Acid Making In the Sulphite Pulp Industry

by A. H. LUNDBERG*

CHAPTER II -- Continued

IX. ANALYSIS OF VARIOUS RAW ACID AND RECOVERY PLANT ARRANGEMENTS

A number of flow sheets have been prepared showing different methods in use for acid making and the control of the acid composition.

Flow sheets 5, 6 and 7 are for cold acid recovery and 8, 9 and 10 for hot acid recovery.

The equipment and its arrangement will be discussed separately for each flow sheet and the value of various arrangements will be analyzed.

A. Flow Sheet No. 5.

The equipment shown on the flow sheet represents the minimum with which acid can be produced.

The various units consist of

1. Sulphur Burner.
2. Surface Cooler.
3. Limestone Towers.
4. Digester.
5. Relief Cooler.
6. Recovery Unit.
7. Cooking Acid Storage.

a. Raw Acid Department.

The composition of the acid is governed in this system entirely by

1. Temperature of the finished acid.
2. Burner gas, SO_2 content and temperature.
3. Behavior of limestone used.

The Tower Acid Charts XXI-XXIV show directly the influence of the finished acid temperature on the acid composition.

For example:

Chart XXI 20°C. gives an acid 4.50% T. 1.71% C. SO_2 for 17% Gas while Chart XXIV 35°C. gives an acid 4.50% T. 1.93% C. SO_2 for 17% Gas.

The heat of reaction and solution is fixed (Chapter 1—Paragraph XII).

The temperature of the burner gas has only slight influence on the final acid temperature as its heat content is usually low. Radiation losses and gains are unimportant except in extreme cases. Therefore the controlling factor is the temperature of the fresh water used for acid making. (See **Chart XXV**).

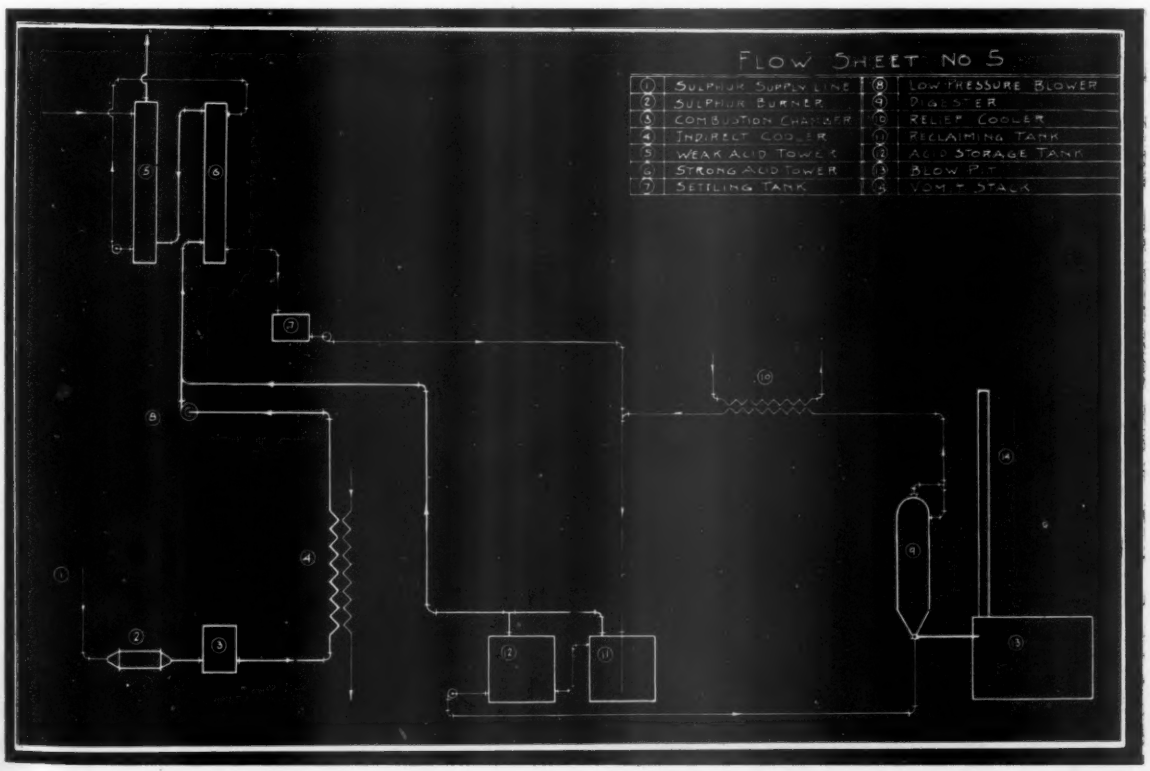
When the water temperature is lower than required for the acid composition, added heat to the water will take care of most cases, but when the water is too warm there are no means to control the composition of the acid.

The charts further show that the per cent True Free SO_2 increases with increased gas strength.

For example:

Chart XXII 25% C.

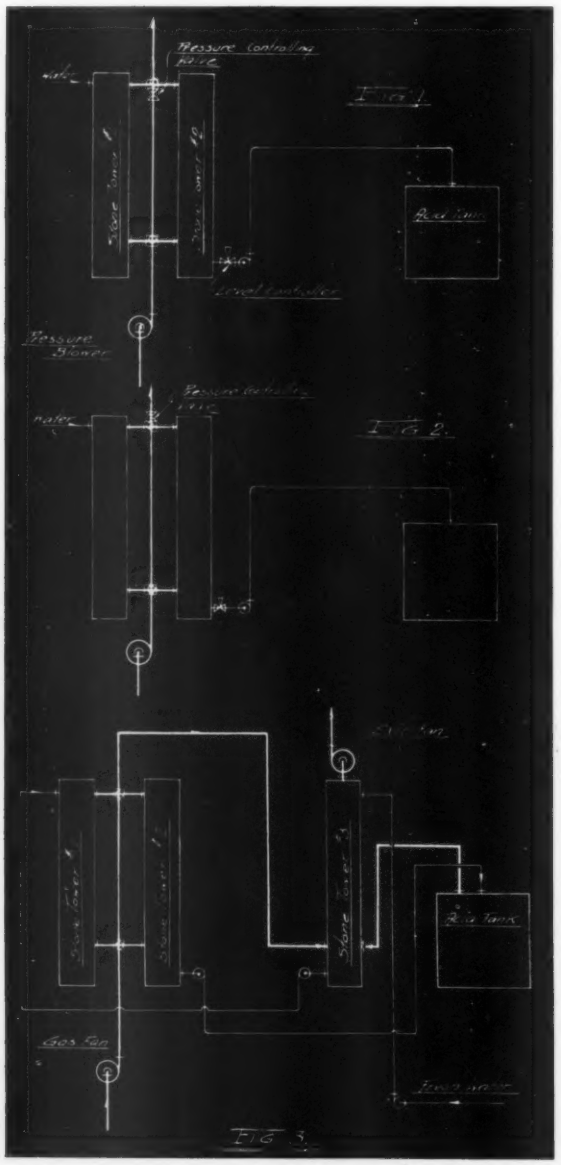
gives an acid 4.50% T. 1.98% C. SO_2 for 10% Gas
gives an acid 4.50% T. 1.82% C. SO_2 for 18% Gas



It is, therefore, possible within certain limits to control the relation between Total and Combined SO_2 by changing the gas strength. The importance of a high temperature, high test gas from the sulphur burning equipment has been explained. Therefore, if the gas test must be lowered, it is recommended that the over-gas to the weak tower is used for dilution of the gas and not that extra air is added to the sulphur burner.

As regards the limestone, it is recommended that if necessary and available a harder to dissolve limerock is selected for summertime than used for wintertime. As in any absorption system the importance of having the rocks well wetted at all times through good distribution of the water throughout the towers, cannot be too much emphasized.

If the tower is operated below its capacity, it is recommended that part of the weak tower acid is recirculated over the weak tower. The weak tower acid usually is so low in True Free SO_2 that the sulphur loss through stripping will be small. Do not, however, recirculate the strong tower acid either over the weak tower or strong tower. If over the weak tower the sulphur loss will be heavy and if over the strong tower the strength of the weak tower acid will be increased.



Recirculating of the weak tower acid over the weak tower might help in reducing the SO_2 losses from the top of the weak tower when the system is operated beyond its capacity. The weak tower acid should, however, if possible, be kept low, not over 1.00% Total SO_2.

As the solubility of Sulphur Dioxide increases with pressure, it is possible to produce an acid of higher true free SO_2 content when operating the towers under pressure. The pressure is best applied to the strong tower only as that arrangement permits charging of the weak tower with limerock under operation. **Figures 1 and 2** show application of pressure to the towers. This arrangement is suitable for installations at high altitudes and where the necessary pressure is relatively small.

Fig. 3 shows a three tower arrangement designed primarily for mills that have outgrown their original system, but not to the degree that a complete new system is warranted. It fills, however, another very important purpose which will be discussed later.

The same limitations as outlined above for limestone tower systems hold true for milk of lime systems as well. The temperature of the fresh water supply is the controlling factor.

b. Cooking Department.

The composition of the acid is governed here as in all Recovery Systems by the

1. Temperature of the raw acid.
2. Amount of gas and liquor relief and SO_2 strength of relief gases.
3. Temperature of the digester relief.

The cooking acid charts XXV-XXVIII show the maximum strength of the acid and the relation between Total and Combined SO_2 for various gas strengths and temperatures.

For example:

Chart XXVIII 25°C. gives an acid 8.20% Total 1.00% Comb. SO_2 for 80% Gas and Chart XXXI 40°C. gives an acid 5.40% Total 1.00% Comb. SO_2 for 80% Gas and Chart XXX 35°C. gives an acid 6.70% Total 1.00% Comb. SO_2 for 90% Gas and 5.20% Total 1.00% Comb. SO_2 for 60% Gas.

To control the flow and strength of the relief gas is a difficult problem at its best. Pulp mills with digester sizes out of proportion with mill capacity, i.e. large digesters for small production have more difficulty in controlling the flow and strength than a mill of same capacity with a larger number of digesters.

With cold acid recovery as shown on **Flow Sheet No. 5**, the acid is usually introduced into the digester while the digester cover is off. Acid is pumped to a certain level. This practice leaves a certain volume of the digester space empty except for air. This air together with the air entrained in the chips has to be relieved when the digester comes to pressure and passes straight

through the whole acid making plant until it finds its way to the atmosphere through the weak tower. This air is decidedly a detriment to acid making and especially to good recovery.

It would be better practice if the pumping method used in connection with hot acid recovery was adopted.

With hot acid recovery the acid is introduced into the digester with its top cover bolted on tight. The digester is pumped completely full with acid. The air is expelled through a special vent directly to the atmosphere (See **Flow Sheet No. 8**).

The hot acid recovery, trade named "The Chemipulp System" goes still further. The pumping is continued until practically all air has been expelled from the digester mass and the acid concentration is equalized throughout the digester content before steaming is started. This procedure does not, however, eliminate all the entrained air from the recovery system as when the digester is filled with acid the air vent must be closed and the excess acid is recirculated back to the hot acid storage, the accumulator. Hot acid, however, penetrates the chips considerably faster than cold acid and thus the better part of the entrained air is eliminated through the vent.

Carbon dioxide gas and other gases are formed during the cooking operation. These gases will have to be handled through the recovery system. It is claimed for the Chemipulp system, however, that these gases can partly be withdrawn from the drop leg before reaching the accumulator. To what degree this is possible is unknown to the writer.

Through careful operation it should be possible to maintain the gas strength at 90 per cent SO_2 (dry basis) and higher. The rate of flow is more or less dependent on the number of digesters, cooking time, cooking system and some other factors. Spacing of the cooks properly and maintaining cooking cycles is, therefore, about all that can be done to even out the flow.

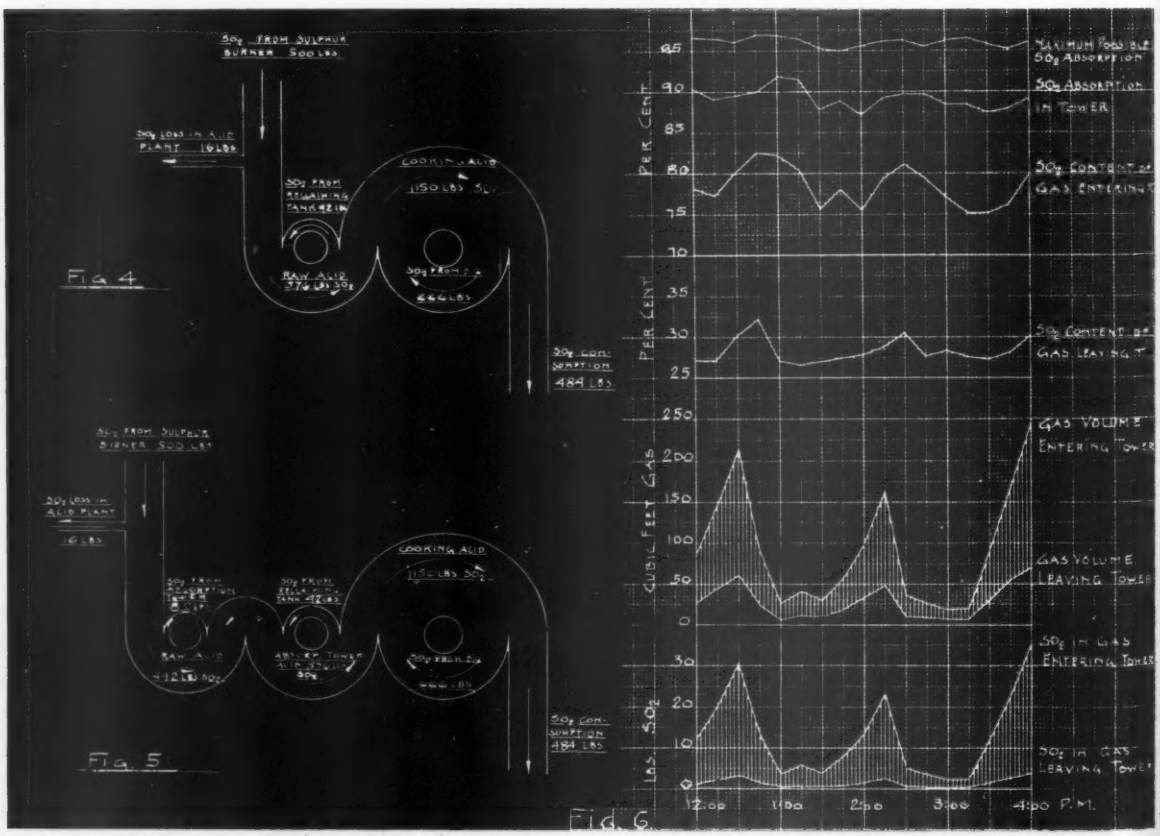
It is common practice to introduce the digester relief into the bottom of a tank, the reclaiming tank. This method probably dates back to Dr. Drewsen's first patent on SO_2 recovery. It is easy to understand that from the standpoint of efficiency a packed tower should be used instead. The Thorne tower was quite widely used some fifteen years ago, but since that time the reclaiming tank has again become the standard equipment for recovery of the digester relief.

The reason for this is hard to understand. That the reclaiming tank alone is unsatisfactory is proven and in most mills of today an absorption tower is placed after the reclaiming tank to absorb the gases escaping from same. Most certainly the absorption can be completed in an absorption tower alone without bothering with piping inside an acid tank and distributors of every description.

Following absorption calculations should be of interest.

Mill Data

Sulphur consumption, 250 lbs. per ton of pulp



Sulphur loss in system, 8 lbs. per ton of pulp
Raw acid requirements, 1300 gals.=10850 lbs. per ton of pulp
Cooking acid, 2300 gals.=19200 lbs. per ton of pulp
Burner gas 17% SO_2 Dry basis
Temperature of fresh water 50° F. (10° C.)
Temperature of cooking acid 86° F. (30° C.)
Digester relief gases 90% SO_2 (Dry Basis)
A combined SO_2 of 1.30% is wanted in the cooking acid, which corresponds approximately to 2.00% in the raw acid.
The problem is to find the maximum possible strength of the cooking acid.

Chart **XXIX** gives a maximum cooking acid at 86° F. Asmospheric pressure of 7.90% Total—1.30% Comb. SO_2 for a dry gas strength of 90% SO_2. How closely can such an acid be approached in actual operation?

The trial and error method must be used and a cooking acid of 6.00% Total—1.30% Comb. SO_2 is assumed.

SO_2 in cooking acid $0.06 \times 19200 = 1158$ lbs.
SO_2 Consumed $= 484$ lbs.
SO_2 circulating between digesters and reclaim $= 668$ lbs.
Gases entering reclaiming tank (dry basis)
$666 \times 5.6 \div 0.90 = 4150$ cu. ft. S.T.P.
of which inert gases 415 cu. ft. S.T.P.

Gases leaving reclaiming tank (**Chart XXIX**) Minimum

SO_2 — 55.5% (Dry Basis)
Inerts — 44.5% (Dry Basis)

Total gases leaving $415 \div 0.445 = 932$ cu. ft. S.T.P.
SO_2 leaving $0.555 \times 932 = 517$ cu. ft. 92 lbs.

These 92 lbs. SO_2 circulate between the acid towers and the reclaiming tank bringing the gas strength of the gas entering the stone towers to 19% SO_2, See Fig. 4.

The strength of the tower acid will have to be 5.31% Total and the Combined 2.00% SO_2.

The temperature of the raw acid will be approx.
$50 + (3.31 \times 1.8) + (2.00 \times 7.2) + 3 = 73°$ F.

According to Tower Acid **Charts XXI—XXII** such an acid cannot be produced. Any increase of the fresh water temperature aggravates the condition. A drop in the strength of the relief gases has the same effect.

To maintain a 6.00% cooking acid 1.30% Comb. SO_2, it will be necessary to cool the relief gases down to a point where the cooking acid can be held at a maximum 77° F. (25° C.)

The corresponding calculations are as follows:

Gases leaving reclaiming tank (**Chart XXVIII**)

$SO_2 = 45.0\%$
Inerts $= 55.0\%$

Total gases leaving $415 \div 0.55 = 755$ cu. ft. S.T.P.
SO_2 leaving $0.45 \times 755 = 340$ cu. ft. 60.7 lbs.

Gas strength to the towers will be 17.9% and the raw acid 5.02% Total—2.00% Comb. SO_2 of a temperature approx. 73° F.

Consequently 45% SO_2 in the overgas is about the maximum that can be handled by the acid plant. **Chart XXIX** gives an acid

5.40 Total—1.30 Comb. SO_2 as the maximum for the specified 86° F. temperature.

The difficulty with absorption in a reclaiming tank lays in the fact that the counter current principle cannot be used. Instead the inert gases have to travel through a layer of strong acid with high gas tention present on top of the tank. This condition is to a great extent rectified by the use of a properly dimensioned and packed absorption tower placed after the reclaiming tank.

Using same data as before and 86° F. (30° C.) cooking acid following results are obtained.

Gases leaving Reclaiming Tank (**Chart XXIX**)

SO_2 — 55.5% Dry Basis
Inerts — 44.5% Dry Basis

Gases leaving Absorption Towers

SO_2 — 10.0% Dry Basis
Inerts — 90.0% Dry Basis

Total gases leaving $415 - 0.90 = 461$ cu. ft. S.T.P.
SO_2 leaving $0.10 \times 461 = 46$ cu. ft. 8.2 lbs.

See Fig. 5.

In this case the gas strength to the stone towers will have a slight drop to 16.8% and the raw acid will be 4.53% Total and 1.85% Comb.

If this combined SO_2 is too low part of the overgas from the reclaiming tank should be bypassed the absorption tower going directly to the burner gas line, provided that the absorption tower is highly efficient. If the efficiency of the absorption tower drops with increased gas rates, there are the alternatives of increasing the cooking acid temperatures or of increasing its strength. The latter probably preferable. It should be clear that with a properly designed absorption tower, the theoretical figures for saturation can be closely approached, were it not for the disturbing influence of the fluctuating relief gas flow and strength. In practice the acid strength in the reclaiming tank varies up and down in accordance with the SO_2 supplied.

The only real value of a reclaiming tank is on account of its relatively large body of acid, which acts like an accumulator and equalizes the load on the absorption tower.

The third stone tower shown on **Fig. 3**, will to a great extent eliminate the upsetting effect caused by the fluctuating relief gas flow. As all the fresh water for acid making is pumped to the top of this tower there is more than ample water available for absorption of this maximum relief flow. The unabsorbable gases pass direct to the atmosphere. An acid equalizing tank after the third tower is of advantage. At the Hawley Pulp & Paper Company, Oregon City, Ore., the vent gases from the digesters at the time they are filled with acid are also exhausted into the third tower near the bottom of same. The Hawley mill producing about 120 tons of unbleached pulp per day reports a negligible sulphur loss in the acid plant exit gases amounting to but 3.85 pounds of sulphur per twenty-four hours.

The foregoing calculations are all based on theoretical conditions. To prove the points made, permission was obtained to publish data from an unpublished report of the Puget Sound Pulp & Timber Company mill at Bellingham, Wash.


RAYONIER
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RESEARCH by Rayonier is constantly directed toward the development of new types of improved wood cellulose to meet the changing requirements of the rayon industry.
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TABLE XXV

Survey of Efficiency of Absorption Tower

Time	Ingoing Gas		Outgoing Gas			Ingoing Acid					Outgoing Acid			Reclaiming Tank Acid			
	SO_2 %	Inerts %	SO_2 %	CO_2 %	Total Inerts %	T. SO_2 %	F. SO_2 %	C. SO_2 %	Temp. °C.	Gals. per Min.	T. SO_2 %	F. SO_2 %	C. SO_2 %	T. SO_2 %	F. SO_2 %	C. SO_2 %	Temp. °C.
12:00	78.2	21.8	27.2	.....	72.8	4.40	2.66	1.74	....	277	4.72	3.04	1.68	6.14	4.54	1.60	36
12:15	77.4	22.6	27.2	8.6	72.8	4.41	2.66	1.75	....	"	5.04	3.34	1.70	.....	.....	.....	....
12:30	80.2	19.8	30.1	26.9	69.9	4.44	2.70	1.74	....	"	5.62	3.88	1.74	.....	.....	.....	....
12:45	82.5	17.5	32.2	17.3	67.8	4.52	2.78	1.74	....	"	4.94	3.24	1.70	6.20	4.60	1.60	35½
1:00	82.2	17.8	27.2	15.0	72.8	4.54	2.76	1.78	....	"	4.51	2.80	1.71	.....	.....	.....	....
1:15	80.3	19.7	26.6	5.6	73.4	4.52	2.74	1.78	....	"	4.54	2.84	1.70	.....	.....	.....	....
1:30	75.7	24.3	27.0	.....	73.0	4.54	2.78	1.76	....	"	4.59	2.87	1.72	.....	.....	.....	....
1:45	78.0	22.0	27.5	.....	72.5	4.55	2.78	1.77	....	"	4.78	3.04	1.74	.....	.....	.....	....
2:00	75.5	24.5	27.8	3.5	72.2	4.46	2.72	1.74	....	"	4.96	3.20	1.74	.....	.....	.....	....
2:15	79.3	20.7	28.9	14.9	71.1	4.46	2.72	1.74	....	"	5.36	3.62	1.74	.....	.....	.....	....
2:30	81.0	19.0	30.6	16.1	69.4	4.41	2.70	1.74	....	"	4.62	2.88	1.74	6.18	4.54	1.64	35
2:45	79.5	20.5	27.7	11.0	72.3	4.34	2.66	1.68	....	"	4.44	2.78	1.66	.....	.....	.....	....
3:00	77.1	22.9	28.4	.....	71.6	4.26	2.54	1.72	....	"	4.36	2.64	1.72	.....	.....	.....	....
3:15	75.1	24.9	27.6	.....	72.4	4.30	2.64	1.66	....	"	4.24	2.64	1.60	.....	.....	.....	....
3:30	75.1	24.9	27.3	.....	72.7	4.20	2.54	1.66	....	"	4.60	2.96	1.64	.....	.....	.....	....
3:45	76.3	23.7	28.1	10.1	71.9	4.28	2.66	1.62	....	"	4.82	3.30	1.52	.....	.....	.....	....
4:00	79.9	20.1	30.1	24.7	69.9	4.26	2.66	1.60	....	"	5.50	3.93	1.57	6.22	4.58	1.64	35

Note: All gas tests recalculated for dry basis.

The flow of acid to the absorption tower was held constant at 277 gallons per min. = 2310 lbs. As the Combined SO_2 is slightly lower in the outgoing acid as against the incoming, a dilution has taken place. The only diluting medium is the vapor in the entering gas. Thus the new volume was calculated

$$\frac{\%\ C.\ SO_2\ Ingoing\ Acid \times 22310}{\%\ C.\ SO_2\ Outgoing\ Acid} = New\ Volume$$

The SO_2 absorption is the difference between SO_2 in the outgoing and incoming acid.

The volume of in and outgoing gases was calculated as per following equations:

$\%\ SO_2 \times A = \%\ SO_2 \times B + lbs.\ SO_2\ absorbed \times 5.6$

$\%\ Inerts \times A = \%\ Inerts \times B$

Where A = Ingoing Volume

B = Outgoing Volume

The new data are tabulated in Table XXVI and on Fig. 6.

The maximum possible SO_2 absorption is taken from Chart XVIII-A where a theoretically designed absorption tower is assumed.

Fig. 6 is very interesting in many respects. Higher gas strength corresponds to higher SO_2 absorption, which is expected. The rate of gas flow, however, seemingly has no effect on the per cent efficiency. On the other hand, high strength ingoing gas seemingly gives higher outgoing gas test but is not conclusive.

The Bellingham mill has six 18′ x 56′ digesters, direct cooking, and Chemipulp hot acid recovery process. The fluctuation in flow is, however, pronounced.

With data available it is possible to approximately figure out the strength of the accumulator vent gases.

At 12:30 Acid entering Reclaiming Tank
2310 lbs. containing 129.8 lbs. SO_2
Acid leaving Reclaiming Tank
2510 lbs. containing 155.6 lbs. SO_2

TABLE XXVI

Absorption Tower Investigation at Bellingham, Wash.

Time	Ingoing Gas			Outgoing Gas			SO_2 Absorbed Lbs.	SO_2 Absorbed %	Max. Efficiency %	Ingoing Acid			Outgoing Acid		
	Volume S. T. P. Cu. Ft.	SO_2 %	SO_2 Lbs.	Volume S. T. P. Cu. Ft.	SO_2 %	SO_2 Lbs.				Flow per Min. Lbs.	T. SO_2 %	T. SO_2 Lbs.	Flow per Min. Lbs.	T. SO_2 %	T. SO_2 Lbs.
12:00	88.9	78.2	12.3	26.6	27.2	1.2	11.1	90.3	96.7	2310	4.40	101.6	2387	4.72	112.7
12:15	146.5	77.4	20.2	45.5	27.2	2.2	18.0	89.2	96.5	"	4.41	101.9	2378	5.04	119.9
12:30	212.4	80.2	30.4	60.3	30.1	3.2	27.2	89.6	96.1	"	4.44	102.6	2310	5.62	129.8
12:45	93.6	82.5	13.8	24.1	32.2	1.4	12.4	89.9	97.0	"	4.52	104.4	2364	4.94	116.8
1:00	26.0	82.2	3.7	6.4	27.2	0.3	3.4	91.9	96.9	"	4.54	104.9	2405	4.51	108.4
1:15	41.3	80.3	5.9	11.1	26.6	0.5	5.4	91.5	96.5	"	4.52	104.4	2419	4.54	109.8
1:30	30.2	75.7	4.1	10.1	27.0	0.5	3.6	87.8	95.2	"	4.54	104.9	2363	4.59	108.5
1:45	57.9	78.0	8.1	17.6	27.5	0.9	7.2	88.9	95.0	"	4.55	105.1	2350	4.78	112.3
2:00	98.3	75.5	13.3	33.4	27.8	1.7	11.6	87.2	95.5	"	4.46	103.0	2310	4.96	114.6
2:15	164.3	79.3	23.3	47.8	28.9	2.5	20.8	89.2	96.2	"	4.46	103.0	2310	5.36	123.8
2:30	37.0	81.0	5.4	10.1	30.6	0.6	4.8	89.7	96.3	"	4.41	101.9	2310	4.62	106.7
2.45	27.4	79.5	3.9	7.8	27.7	0.4	3.5	89.7	95.5	"	4.34	100.3	2338	4.44	103.8
3:00	18.9	77.1	2.6	6.0	28.4	0.3	2.3	88.5	96.2	"	4.26	98.4	2310	4.36	100.7
3.15	19.6	75.1	2.6	6.7	27.6	0.3	2.3	88.5	96.5	"	4.30	99.3	2396	4.24	101.6
3:30	89.5	75.1	12.0	30.7	27.3	1.5	10.5	87.5	95.8	"	4.20	97.0	2338	4.60	107.5
3:45	165.5	76.3	22.6	54.6	28.1	2.8	19.8	87.8	95.2	"	4.28	98.9	2462	4.82	118.7
4:00	244.4	79.9	34.9	70.2	30.1	3.8	31.1	89.1	96.0	"	4.26	98.4	2354	5.50	129.5

Increased volume based on differential in Comb. SO_2		
SO_2 absorbed in Reclaiming Tank	25.8 lbs.	
SO_2 leaving Reclaiming Tank	30.4 lbs.	
SO_2 in gas leaving accumulator	56.2 lbs.	SO_2
SO_2 by volume	315	cu. ft.
Inert gases $0.198 \times 212.4 =$	42	cu. ft.
	357	cu. ft.
Gas leaving accumulator approx.	88.2%	SO_2
	11.8%	Inerts
	100.0%	

The digester relief gases, therefore, must test considerable higher than the 90% SO_2 strength assumed in earlier calculations of this chapter. Absorption in the reclaiming tanks falls far short of the theoretical. See **Chart XXX.**

Without the absorption tower the raw acid would have to be increased in proportion to the acid strength increase in the tower, which at certain times of the year is not possible on account of fresh water temperatures.

Another point worth mentioning at this time is the upsetting effect pumping of a digester has to normal operation in an arrangement as **Flow Sheet No. 5.**

To save time the digesters are usually filled with acid in 10 to 15 min. The acid is thus withdrawn from acid storage much faster than it is being replaced from the acid plant. As the storage is connected to the tower gas line, gas is pulled over to acid storage thus causing a sudden increase of the draught on the sulphur burner. This can cause sublimed sulphur to be pulled over to the acid plant.

Some mills are equipped with a vacuum breaker arrangement permitting outside air to replace the void in the acid storage caused by the pumping. This air is later on vented to the acid towers. The 3rd stone tower arrangement **Fig. 3,** would also here be of beneficial value.

Conclusions

Acid making in general is a matter of temperature control. If a fresh water supply of a uniform temperature of about 12° C. (54° F.) was available the year round, acid making would not present a problem. Such a water supply, however, is not obtainable in many mills.

The layout as per **Flow Sheet No. 5** has several weaknesses, both in the raw and cooking acid departments.

1. Practically no control of the acid composition except when cold fresh water is available.
2. No means for building up the cooking acid strength quickly as need may occur.
3. Reclaiming system poor and inadequate.
4. No control of fluctuating relief gas flow with consequent disturbance in Acid Plant operation.
5. Normal operation is upset by pumping of acid to digesters.
6. The raw acid and cooking acid departments are integral parts of each other.

BRUCE HUTCHISON, of Saanich, Vancouver Island, B. C., has written an outstanding book of non-fiction—"The Unknown Country—Canada and Her People"—which agrees and upholds the doctrine espoused by this magazine and other Miller Freeman publications:

That there is a community of interest in Pacific North America which transcends national boundaries without impairing them.

Understanding of Canadians and Canada should be advanced by Mr. Hutchison's ably written book.

100 Women Employed At West Linn Mill

● About 100 women are working now in the Crown Zellerbach mill at West Linn, Ore., according to J. A. Ream, personnel and safety supervisor.

This mill was one of the last to resort to employment of women to make up for the heavy losses in the ranks of men workers.

About half of this number are employed in the recently installed towel converting department, which was moved from the Crown Zellerbach mill at Camas, Wash., to West Linn.

One of the most unusual mill jobs taken by a woman is that of oiler on one of the West Linn paper machines.

City Streets Go Without Dust Laying Liquor

● One of the hardships of wartime restrictions on the pulp and paper industry is that Port Angeles, Wash., has had to go without waste pulp liquor to lay the dust on its unpaved streets.

Since the shutdown of the sulphite mill at the Port Angeles Division of Crown Zellerbach Corporation, caused by the shortage of logs, this waste liquor has not been available.

The waste liquor—only a small part, of course, of that which went into the Straits of Juan de Fuca—had been stored in a cement acid tank, part of the original 1922 construction at the mill. The city sprinkling wagons loaded up with it as needed.

The liquor was treated to remove acidity. It acted as a binder on unpaved gravel roads. This use of waste liquor is an old Swedish custom but, of course, very little is needed in most cities.

Although the other Port Angeles mills are using their digesters, they have no facilities for storing any liquor for use of the city.

Howard Smith Praises British Columbia Mills

● Pulp and paper production in British Columbia, representing an investment greater than that in the entire automobile industry of Canada, deserves recognition as an essential wartime activity, according to E. Howard Smith, vice-president of Howard Smith Paper Mills, Montreal, and president of the Canadian Pulp and Paper Association, who visited the Pacific coast recently with A. E. Cadman, secretary of the association, and A. A. St. Auben, director of Canada's Wartime Machine Shop Board.

During their visit to British Columbia the easterners spent some time visiting pulp and paper mills.

"Few people realize the all-around service being rendered in wartime by the Canadian pulp and paper industry," Mr. Smith told PACIFIC PULP & PAPER INDUSTRY during his stay in Vancouver. "In British Columbia the mills are producing pulps for nitrating into explosives, for rayon and many other essential uses.

"Pulp produced in British Columbia reaches Germany and other enemy countries in the form of block busters and other explosives. The industry is also supplying newsprint to sustain a free press, producing board for packaging munitions and essential food supplies, surgical dressings for use overseas, building boards for army cantonments, papers for preserving food, such as fruit wraps, and a great variety of papers for other uses."

Hesse-Ersted Radio Talk

George R. Castner, assistant treasurer of Hesse-Ersted Iron Works, Portland, Ore., recently was interviewed on the radio regarding the war work done by that company. He admitted to being plenty jittery, having been asked at the last minute to pinch-hit for Kenneth B. Hall, president of Hesse-Ersted.

Dinner for One

protected by Paper

It is dinner time, in a fox-hole or on a patrol post, far from a field kitchen —and a fighting man must eat. The Army has taken care of that. It has planned a nourishing five-course meal, and two great industries, working together, have put that meal in the soldier's pocket.

The food industry has produced the compact dehydrated units for Dinner Ration K, and the paper industry has wrapped them, packaged them, protected them, from factory to front lines all over the world. Paper protects the precious contents from air and moisture, protects them against deterioration in color, flavor, nutritive value.

It is one of the wonders of World War II—one of the many dramatic, vitally essential contributions of the paper industry to the war program.

Engineering Data Book Has Unique Features

● Issued by the technical section, Canadian Pulp and Paper Association, 3420 University St., Montreal, "Engineering Data Sheets," Volume 1 ($5-$3 to Canadian Technical Section members) is a 192-page compendium of vital material culled from a wide range of sources and brought together for quick and convenient reference.

It runs the gamut of pulp and paper engineering and chemical problems. A few on the many subjects covered are: "Capacity of Showers," "Friction Losses Through Pipes," "Resistance of Valves and Fittings to Flow of Liquids," "Weir and Flume Data," "Pulp and Water Relations," "General Conversion Factors," "Freeness-Strength Curves," "Inter-Conversion of Freeness Scales," "Hydrometer Scales," and "Centrifugal Pump Data."

Calco Chemical Promotion

● The Calco Chemical Division, American Cyanamid Company, announces the appointment of Sidney C. Moody as assistant general manager in charge of all departments of the division.

Mr. Moody joined the Calco organization in 1919. He was born in Evanston, Ill., in 1895, and graduated from Williams College. For many years he has been a department sales manager, where his activities have covered all phases of the business of manufacturing and selling organic chemicals and dyestuffs.

Lindsay Wire Co. Official's Son Heads for Pacific

Private Howard E. Smith, Third Replacement Regiment, U. S. Field Artillery, who is the son of H. J. Smith, secretary of the Lindsay Wire Weaving Company of Cleveland, O., recently arrived at Fort Ord, Calif., presumably headed eventually for one of the Pacific war fronts.

Private Smith hasn't been home since being inducted in April. He was stationed at Ohio State University and later Fort Bragg.

Scott Paper Company Names Three Directors

● The Scott Paper Company, Chester, Pa., makers of tissue and towels, recently announced that Francis W. Plowman, former manager of distribution research, had been elected a director and appointed general sales manager, and that J. L. Ober, acting vice president, and W. R. Scott, 3rd, secretary and treasurer, had been elected directors. The Scott company is the parent firm of the Coos Bay Pulp Corporation, which operates pulp mills at Anacortes, Wash., and Empire, Oregon.

In his statement following the board meeting, Thomas B. McCabe, president of the company, said that Mr. Plowman, in his new capacity, "will direct and coordinate all departments of the distribution organization."

Mr. Plowman grew up only a few miles from Chester, where the main manufacturing plant and general offices of the company are located. He is a graduate of Washington and Lee University and took post graduate work at Harvard Business School.

Plowman joined the Scott organization 15 years ago, starting in the personnel department, and later was assistant comptroller. During most of his career he had specialized in distribution and research. He has directed the sales of the Marinette Paper Company since its acquisition by the Scott company.

Mr. Ober is a native of Beverly, Mass. A graduate of the University of Maine, in electrical engineering, he was associated for many years with Stone & Webster as assistant to the president before joining Scott in 1934. Mr. Ober served for several years as vice president and general manager of Brunswick Pulp & Paper Company, a Scott subsidiary before becoming acting vice president in charge of production at the main plant in Chester.

W. R. Scott III is a graduate of the University of Pennsylvania. He joined the legal department of the Scott company in 1934, and became secretary of the company in 1939. He was made treasurer in 1942. Mr. Scott, who is not related to the founders of the business, heads the company's legal department.

William S. Campbell is president of the Coos Bay Pulp Corporation, and Mr. Ober is vice president and director in this subsidiary. Mr. Scott is its treasurer. C. Wylie Smith is vice president and general manager of the Pacific Coast subsidiary, which supplies pulp to the parent firm.

Lt. Flateboe Transfers

Lieut. Bill Flateboe, son of E. I. Flateboe, president and general manager of Sumner Iron Works, Everett, Wash., was moved closer home when he was transfered recently to Sand Point navy air base in Seattle.

Hercules Officials Are Promoted

● Hercules Powder Company has announced the election of Philip B. Stull, general manager of the paper makers chemical department, as vice president, and the appointment of Ralph B. McKinney to succeed Mr. Stull.

These changes in the chemical company's management were announced by Charles A. Higgins, Hercules president, following the August meeting of the board of directors.

Mr. Stull, who served as general manager of the paper makers chemical department for the past six years, became associated with Hercules in 1926 when the Virginia Cellulose Company of Hopewell, Va., of which he was president, was acquired.

Mr. McKinney, who steps up from the post of assistant general manager to head of the PMC department, has been with Hercules since its founding 31 years ago. He was recently chosen president of the Quarter Century Club of Hercules' home office employes, and is a past president of the Hercules Men's Club.

B. C. Pulp & Paper Co. Starts Holberg Logging

● British Columbia Pulp & Paper Co., currently engaged in the production of dissolving and other pulps regarded as highly essential in Canada's war effort, has begun to take out logs from its new camp at Holberg at the northern tip of Holberg Inlet, Quatsino Sound, Vancouver Island. This is in the extreme northern part of Vancouver Island.

The logs are boomed at Holberg and towed down the inlet about 40 miles to the company's Port Alice mill. The company also operates a mill at Woodfibre on Howe Sound.

B. C. Pulp has moved its main logging operations from the Spry camp to Holberg with Walter Warren in charge as superintendent. A floating camp was moved to Holberg some time ago. It has accommodation for 200 men. A townsite has been planned for married men and their families.

An 1800-foot wharf has been built, extending into deep water, and this is served by a gravel road. The logging is primarily a trucking proposition, with three Macks and one Hayes in service.

The company has acquired 300,000,000 feet of timber in the area and will probably increase its holdings depending on requirements.

Penn Salt Makes Personnel Changes

● Y. F. Hardcastel, vice president in charge of manufacturing of the Pennsylvania Salt Manufacturing Company of Philadelphia, announces the reorganization of his central office manufacturing and engineering staffs due to the expansion of the company's manufacturing activities.

Walker Penfield, formerly manager of engineering, has been appointed works manager and will be in charge of all the manufacturing activities of the company and all of its subsidiaries except the Tacoma, Wash., Pennsylvania company. William F. Mitchell, formerly assistant to Mr. Penfield, continues in that capacity with the title of assistant to the works manager.

Floyd H. Walker, formerly chief engineer of Swenson division of the Whiting Corporation, is appointed chief engineer and will be in charge of the central engineering division.

Vincent K. O'Connor, formerly with the Tacoma, Wash., office, has been appointed manager of the newly created personnel department in charge of the handling of all personnel matters and labor relations.

Western Gear At Lynwood Wins Police Guidon

● The thirteen men of the Auxiliary Military Police Unit of Western Gear Works, Lynwood, Calif., were presented the auxiliary military police guidon by command of Major General Kenyon A. Joyce, Commanding General, Ninth Service Command, U. S. A., on September 26.

This Lynwood guidon was the second such award to be won by Western Gear Works and the fourth in the Ninth Service Command—the first having been won by the police force of Western Gear Works plant in Seattle.

About 2,000 attended the Lynwood ceremony. Speakers included Berk Bannan, vice-president and general manager, Western Gear Works; Lt. Col. Leonard R. Dykes, Southern Security District, and S. LeRoy Crawshaw, manager of plants, Western Gear Works.

Lt. Moffitt Dies In Crash

● The many friends of Lt. James Moffit, USNR, were grieved to learn of his death in Alaska. He was a son of Dr. H. C. Moffitt, a director of Blake, Moffitt & Towne, and a nephew of James K. Moffitt, president of the company. Lt. Moffitt had been on duty in Alaska for some months and it was reported that he was enroute to his base by plane when it crashed.

Victoria Mill Gets Western Canada Waste

● Waste paper gathered at many points in Western Canada goes to the Sidney Roofing & Paper Company of Victoria, B. C., because this is the only paperboard mill in the western part of the Dominion. And yet the supplies are usually inadequate.

This is true, even though this is a small mill and the methods of gathering the waste paper seem to be more thorough than in the United States. In army camps and navy bases throughout Western Canada, officers are assigned to collecting of waste paper. Besides this, school children and other groups are engaged in gathering it. The mill sends out its own representatives to obtain waste.

Recently, because the mill was running white paper, there was an opportunity to accumulate this waste paper but as a rule there is a "shortage."

The Sidney mill is using about twice as much waste paper as it did before the war. Its groundwood plant has a capacity of about ten tons per 24-hour day.

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